WHRC
HAVERFORD COLLEGE
HAVERFORD, PENNA.

Before the

FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matter of :

Amendment of Part 15 of :
the FCC Rules Governing :
Restricted Radiation Devices :

DOCKET NO. 9288

Haverford, Pa.
July 28, 1949

Hon. Commissioners:

I am writing to you concerning your more recently proposed regulations for college radio stations, and would like to advocate the retention of the present regulations, with some necessary modifications, of course.

Unfortunately, Haverford's WHRC as well as many other college stations, would be unable to meet your proposal of Educational FM status. Not only would it be financially almost insurmountable, but it would also assume that the majority of our listeners on Haverford's campus have FM sets which is not the case. There are few if any FM sets on the campus. Thus to follow your proposal would automatically eliminate the radio audience in which we are most interested.

Another proposal which you have made is that of transforming the present broadcasting set-up to meet standard broadcast regulations. This is also financially prohibitive, not to mention the fact that it would necessitate employing FCC licensed engineers from outside. In a liberal arts college such as Haverford, there are not likely to be many FCC licensed engineers among the student body.

It seems to me that the best solution to this problem would be a revision of the regulations along the present line. Such revision would naturally have to include a more rigid and methodical control of excess radiation from the carrier system without cutting it down to such a degree that it is impossible to transmit at all. This revision would naturally have to be reasonable on the one hand and strictly observed on the other, and as it is about the only alternative which is left to smaller campus stations, we feel you should give it fair consideration.

In closing, I would like to mention the fact that WHRC's relations (and as far as we know the relations of other college stations in the vicinity) with the larger commercial stations has been of the best. We often cooperate in programming and just recently a network has been formed here sponsered by WFIL. In other words, to the best of our knowledge, there has been no indication of conflict either in radiation or personal contacts with the neighboring stations.

Respectfully submitted for your kind consideration,

I remain, sincerely yours,

Brooks B Cooper

Brooks B. Cooper
President, WHRC

The Voice Of Haverford . . . 580 On Your Dial

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Haverford, Penna.

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Brooks B. Cooper
President, WHRC

Reference Copy:

W I B G
SEABOARD RADIO BROADCASTING CORP.
PHILADELPHIA 2, PA.

Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D.C.

In the Matter of :

Amendment of Part 15 of :
the F.C.C. Rules Governing :
Restricted Radiation :
Devices : DOCKET NO. 9288

May 23, 1949

Hon. Commissioners:

The purpose of this brief is to recommend that specific provision in the FCC rules be made for campus radio stations, and that hearings be held on the matter. This appeal is made on behalf of college radio in general and station WHRC (Haverford College) in particular. The educational value of this extracurricular activity cannot be exaggerated. The cooperation extended to WIBG by WHRC and other campus radio stations has been both generous and valuable. As a training ground for commercial broadcasting, college radio centers should not only be continued but encouraged to expand. The creative aspect of college broadcasting, i.e. dramatics, writing and producing, will continue to add stimulus and a finer appreciation for the arts.

Respectfully submitted,

(signed)
Paul Collins
Educational Director WIBG

PC/sm

jcb

Reference copy:

Haverford College
Haverford, Pa.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the matter of :

Amendment of Part 15 of :
the F.C.C. Rules Governing :
Restricted Radiation Devices :

DOCKET NO. 9288

May 12, 1949

Hon. Commissioners:

Those of us who have been interested for a good many years in college broadcasting stations regret the proposed restrictions which will make impractical further operation of these stations. This activity is an important one on the campus from many points of view. It is a service enjoyed and appreciated by the college community; it offers opportunity for constructive extracurricular activity to those interested in dramatics and public speaking and opportunity for actual experience in programing and broadcasting to students seriously interested in radio work as a career. College broadcasting stations give the student actual work in radio design, construction and servicing that is of incalculable value to prospective technicians; in other words, the college station serves as a laboratory to the undergraduate interested in radio engineering.

There has been an earnest effort to reduce excess radiation, and it is expected that any necessary regulations laid down by the Commission would receive serious attention from station technicians and personnel with a minimum of FCC supervision.

Educational FM does not seem feasible for the following reasons: (1) there are few FM receivers at the college, (2) licensed engineers (radio telephone 1st class) are seldom found among the students, (3) the expense of changing equipment is too great.

These stations could operate more effectively under new rules directly applicable to them, rather than under those set up for commercial broadcasting stations.

I recommend, therefore, that the Federal Communications Commission formulate specific regulations for the operation of college broadcasting stations and that hearings be held on the matter.

Respectfully submitted,

(Signed) T.A. Benham
Assistant Professor in Physics
Faculty Advisor to Station WHRC

Haverford College
Haverford, Pa.

Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D.C.

In the Matter of :

Amendment of Part 15 of :
the FCC Rules Governing :
Restricted Radiation Devices :

DOCKET NO. 9288

Haverford, Pa.
May 10, 1949

Hon. Commissioners:

In regard to the proposals which you have recently made for the future regulation of college radio stations, I should like to express both my concern and the concern of the Haverford College community in the matter.

It would seem that the present status of college stations could be maintained, keeping at the same time within legal operational limits set down under FCC supervision. Forcing college stations into Educational FM would entail a great change and cost as well as automatic elimination of most of the college radio audience, since so few members of the community have FM receivers. The possibility of reorganizing under standard broadcast regulations would also be very difficult because students at similar liberal arts colleges the size of ours are not likely to have the necessary FCC licenses.

Due to these proposed regulations, therefore, WHRC of Haverford as well as the majority of other college stations will be forced to shut down altogether. This, I am sure you will agree, would be a great loss. College radio is an important aspect of campus life and performs a definite service to the college community. It is an extra-curricular activity which combines the creative, cultural, and technical aspects of education within its scope. Even in liberal arts colleges where there are often no official radio courses offered, this activity has contributed valuable experience to men who have subsequently entered the field in announcing, administrative, or technical capacities. Other valuable aspects of cultural life which are amplified by college broadcasting are the fields of dramatics, speech, and music.

To my knowledge there has been excellent cooperation between such stations as WHRC and other standard broadcast stations. Some college stations are actually sponsored by larger stations and many contribute talent and programs to their schedules. There seems little likelihood that they would regard college stations either as rivals or as strong enough to interfere with their frequencies.

In conclusion I would like respectfully to suggest that the commission reconsider their proposal with an eye to revising the present regulations governing college broadcasting. Such a revision could be based on reasonable though strictly observed radiation limits checked possibly by field strength readings at regular intervals, and on associated FCC specifications.

Thanking you for your fair consideration of this proposal,

I remain sincerely yours,

BBL/lha

[Reprinted from FEDERAL REGISTER of September 20, 1957, 22 FR 7507]

FEDERAL COMMUNICATIONS COMMISSION

Part 15—INCIDENTAL AND RESTRICTED RADIATION DEVICES

(August 1957 Edition)

TITLE 47—TELECOMMUNICATION

Chapter I—Federal Communications Commission

PART 15—INCIDENTAL AND RESTRICTED RADIATION DEVICES

RECAPITULATION OF REGULATIONS

Because of the number of outstanding amendments to Part 15 since it was last recapitulated in the FEDERAL REGISTER (December 29, 1955, 20 F. R. 10055), Part 15 is recapitulated as of August 31, 1957, to read as set forth below:

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] EVELYN F. EPPLEY,
Acting Secretary.

Subpart A—General

Sec.
15.1 Basis of this part.
15.2 Scope of this part.
15.3 General condition of operation.
15.4 General definitions.
15.5 Equipment available for inspection.
15.6 Information required by the Commission.
15.7 General requirement for restricted radiation devices.

Subpart B—Incidental Radiation Devices

15.31 Operating requirements.

Subpart C—Radio Receivers

15.61 Scope of this subpart.
15.62 Radiation interference limits.
15.63 Measurement procedure.
15.64 Certification of radio receivers.
15.65 Information to be filed with Commission.
15.66 Identification of certificated receivers.
15.67 Operation of radio receivers aboard a ship.
15.68 Effective date of this subpart.
15.69 Interference from a radio receiver.

Subpart D—Community Antenna Television Systems

15.161 Radiation from a community antenna television system.
15.162 Demonstration of compliance.
15.163 Interference from a community antenna television system.
15.164 Responsibility for a receiver generated interference.
15.165 Measurement of field strength.
15.166 Effective date of radiation limits in this subpart.

Subpart E—Low Power Communication Devices

15.201 Frequencies of operation.
15.202 Radiation limitation below 1600 kc.
15.203 Alternative requirement for operation on frequencies between 160 kc and 190 kc.
15.204 Alternative requirement for operation on frequencies between 510 kc and 1600 kc.

Sec.
15.205 Operation in the frequency band 26.97–27.27 Mc.
15.206 Operation above 70 Mc.
15.207 Class B emission prohibited.
15.208 Certification requirements.
15.209 Location of certificate.
15.210 Interference from low power communication devices.

AUTHORITY: §§ 15.1 to 15.210 issued under sec. 4, 48 Stat. 1066, as amended; 47 U. S. C. 154. Interpret or apply secs. 301, 403, 48 Stat. 1081, 1094; 47 U. S. C. 301, 403.

SUBPART A—GENERAL

§ 15.1 *Basis of this part.* Section 301 of the Communications Act of 1934, as amended, provides for the control by the Federal Government over all the channels of interstate and foreign radio communication and further provides, in part, that no person shall use or operate apparatus for the transmission of energy, communications or signals by radio when the effects of such operation extend beyond state lines or cause interference with the transmission or reception of energy, communications, or signals, of any interstate or foreign character by radio, except under and in accordance with the Communications Act and a license granted under the provisions of that act. Restricted and incidental radiation devices emit radio frequency energy on frequencies within the radio spectrum and constitute a source of harmful interference to authorized radio communication services operating upon the channels of interstate and foreign communication unless precautions are taken which will prevent the creation of any substantial amount of such interference.

§ 15.2 *Scope of this part.* (a) This part contains rules that set forth the conditions under which the operation of incidental and restricted radiation devices is considered to fall outside the purview of section 301 of the Communications Act which specifies when a station license is required as a condition for lawful operation.

(b) No incidental or restricted radiation device which fails to conform to the provisions of this part, or which causes harmful interference, may be operated without a station license. Unless such devices may be operated in accordance with the provisions of some other part of this chapter (see particularly Part 19, Citizens Radio Service), persons wishing to operate such devices in a manner inconsistent with this part will be required to first secure an amendment of the Commission's rules to establish a licensed service providing for such operation and setting forth the technical and other limitations thereof; *Provided,* That in appropriate circumstances, when such a petition for rule making has been filed, the Commission may consider, prior to final action thereon, applications for Special Temporary Authorizations to operate stations on a developmental basis where it can be shown that such temporary operation would be in aid of a final determination as to whether the proposed rule should be adopted, and that such temporary operation would otherwise be in the public interest; and *Provided further,* That the Commission will, in exceptional situations, consider individual applications for licenses to operate incidental or restricted radiation devices, not conforming to the provisions of this part, where it can be shown that the proposed operation would be in the public interest, that it is for a unique type of station or for a type of operation which is incapable of establishment as a regular service, and that the proposed operation cannot feasibly be conducted under this part.

§ 15.3 *General condition of operation.* Persons operating restricted or incidental radiation devices shall not be deemed to have any vested or recognizable right to the continued use of any given frequency, by virtue of prior registration or certification of equipment. Operation of these devices is subject to the conditions that no harmful interference is caused and that interference must be accepted that may be caused by other incidental or restricted radiation devices, industrial, scientific or medical equipment, or from any authorized radio service.

§ 15.4 *General definitions*—(a) *Radio frequency energy.* Electromagnetic energy at any frequency in the radio spectrum between 10 kc and 3,000,000 Mc.

(b) *Harmful interference.* Any radiation or induction which endangers the functioning of a radio navigation service or of a safety service or obstructs or repeatedly interrupts a radio service operating in accordance with the regulations in Part 2 of this chapter.

(c) *Incidental radiation device.* A device that radiates radio frequency energy during the course of its operation although the device is not intentionally designed to generate radio frequency energy.

(d) *Restricted radiation device.* A device in which the generation of radio frequency energy is intentionally incorporated into the design and in which the radio frequency energy is conducted along wires or is radiated, exclusive of transmitters which require licensing under other parts of this chapter and exclusive of devices in which the radio frequency energy is used to produce physical, chemical or biological effects in materials and which are regulated under the provisions of Part 18 of this chapter.

(e) *Community antenna television system.* A restricted radiation device designed and used for the purpose of distributing television signals by means of conducted or guided radio frequency currents to a multiplicity of receivers outside the confines of a single building.

NOTE: The television signals that are distributed are modulated radio frequency signals and may be:

(a) Broadcast signals that have been received and amplified,

(b) Broadcast signals that have been received and converted to another frequency,

(c) Any other modulated radio frequency signals fed into the system.

(f) *Low power communication device.* A low power communication device is a restricted radiation device, exclusive of those employing conducted or guided radio frequency techniques, used for the transmission of signs, signals (including control signals), writing, images and sounds or intelligence of any nature by radiation of electromagnetic energy.

Examples: Wireless microphone, phonograph oscillator, radio controlled garage door opener and radio controlled models.

§ 15.5 *Equipment available for inspection.* Any equipment or device subject to the provisions of this part together with any license, certificate, notice of registration or any technical data required to be kept on file by the operator of the device shall be made available for inspection by Commission representatives upon reasonable request.

§ 15.6 *Information required by the Commission.* The owner or operator of any device subject to this part shall promptly furnish to the Commission or its representative such information as may be requested concerning the operation of the device including a copy of any field strength measurements made by or for the operator of the device.

§ 15.7 *General requirement for restricted radiation devices.* Unless regulated under some other subpart of this part, any apparatus which generates a radio frequency electromagnetic field functionally utilizing a small part of such field in the operation of associated apparatus not physically connected thereto and at a distance not greater than $\frac{157{,}000}{F(\text{kc.})}$ feet $\left(\text{equivalent to } \frac{\lambda}{2\pi}\right)$ need not be licensed provided:

=302 ft. @ 520 kc.

(a) That such apparatus shall be operated with the minimum power possible to accomplish the desired purpose.

(b) That the best engineering principles shall be utilized in the generation of radio frequency currents so as to guard against interference to established radio services, particularly on the fundamental and harmonic frequencies.

(c) That in any event the total electromagnetic field produced at any point a distance of $\frac{157{,}000}{F(\text{kc.})}$ feet $\left(\text{equivalent to } \frac{\lambda}{2\pi}\right)$ from the apparatus shall not exceed 15 microvolts per meter.

(d) That the apparatus shall conform to such engineering standards as may from time to time be promulgated by the Commission.

(e) That in the event harmful interference is caused, the operator of the apparatus shall promptly take steps to eliminate the harmful interference.

SUBPART B—INCIDENTAL RADIATION DEVICES

§ 15.31 *Operating requirements.* An incidental radiation device shall be operated so that the radio frequency energy that is radiated does not cause harmful interference. In the event that harmful interference is caused, the operator of the device shall promptly take steps to eliminate the harmful interference.

SUBPART C—RADIO RECEIVERS

§ 15.61 *Scope of this subpart.* Radio receivers come within the scope of this subpart insofar as they are restricted radiation devices and generate and radiate radio frequency energy. Typically, these rules apply to superheterodyne receivers in which the oscillator may produce harmful interference. As another example, these rules also regulate television broadcast receivers with respect to the radio frequency energy which is generated by the horizontal sweep circuits and which may cause interference.

§ 15.62 *Radiation interference limits.* (a) The radiation from all radio receivers that operate (tune) in the range 30 to 890 Mc, including frequency modulation broadcast receivers and television broadcast receivers, manufactured after the effective date specified in § 15.68 shall not exceed the following field strength limits at a distance of 100 feet or more from the receiver:

Frequency of radiation (Mc)	Field strength (uv/m)
0.45 up to and including 25	See paragraph (b).
Over 25 up to and including 70	32.
Over 70 up to and including 130	50.
130–174	50-150 (linear interpolation).
174–260	150.
260–470	150–500 (linear interpolation).
470–1000	500.

(b) Pending the development of suitable measurement techniques for measuring the actual radiation in the band 0.45 to 25 Mc, the interference capabilities of a receiver in this band will be determined by the measurement of radio frequency voltage between each power line and ground at the power terminals of the receiver. This requirement applies only to radio receivers intened to be connected to power lines of public utility systems. For television broadcast receivers the voltage so measured shall not exceed 100 uv at any frequency between 450 kc and 25 Mc inclusive. For all other receivers the voltage shall not exceed 100 uv at any frequency between 450 kc and 9 Mc inclusive, 1000 uv for frequencies between 10 Mc and 25 Mc and linear increase from 100 uv to 1000 uv for frequencies between 9 Mc and 10 Mc.

§ 15.63 *Measurement procedure.* (a) Any measurement procedure acceptable to the Commission may be used to show compliance with the requirements of this subpart. A detailed description of the proposed measurement procedure, including a list of the test equipment to be used, shall be submitted to the Commission when requesting a determination regarding the acceptability of the proposed measurement procedure.

(b) The following methods of measurement are considered acceptable procedures for certification of receivers pursuant to § 15.64:

(1) Institute of Radio Engineers Standard 51 IRE 17S1 for radiation measurements.

(2) Institute of Radio Engineers Standard 54 IRE 17.S1 for powerline interference measurements for television broadcast receivers, when the standard is modified by substituting a line stabilization network having the electrical constants described in MIL–I–16910A, "Military Specification For Interference Measurement" available from the Commanding Officer, Naval Supply Depot, Scotia 2, New York.

(c) In the case of measurements in the field, radiation in excess of 15 uv/m at any frequency between 450 kc and 25 Mc at the border of the property and more than 15 feet from any power line crossing this border under the control and exclusive use of the person operating or authorizing the operation of the receiver will be considered an indication of noncompliance with the radiation requirements of this subpart.

§ 15.64 *Certification of radio receivers.* (a) No radio receiver manufactured after the effective dates of this subpart that operates in the range 30 to 890 Mc, including frequency modulation broadcast receivers and television broadcast receivers, shall be operated without a station license unless it has been certificated to demonstrate compliance with the radiation interference limits in this subpart.

(b) The owner or operator need not certificate his own receiver, if it has been certificated by the manufacturer or the distributor.

(c) Certification made by a manufacturer or the distributor shall be based on tests made on receivers actually produced for sale. Tests shall be performed on a sufficient number of production units to assure that all production units comply with the radiation limitations of this subpart.

(d) The certificate may be executed by an engineer skilled in making and interpreting field strength measurements.

(e) The certificate shall contain the following information:

(1) Name of manufacturer or distributor of receiver,

(2) Model number,

(3) Brief description of receiver, including tuning range, type of circuit, purpose for which used (as broadcast, aircraft, etc.),

(4) Brief statement of the measurement procedure used,

(5) Date the measurements were made,

(6) A summary of the data obtained,

(7) A statement certifying that on the basis of measurements made, the radio receiver is capable of complying with the requirements of this part under normal operation with the usual maintenance,

(8) The name and address of the certifying engineer, and name and address of his employer, if any, and

(9) Date of the certificate.

(f) The certificate shall be retained by the owner, manufacturer or the distributor for a period of five years, and shall be made available, upon reasonable request, to an authorized Commission representative, or photostat furnished by mail. (See § 15.65 for filing requirement with FCC).

§ 15.65 *Information to be filed with Commission.* (a) Each manufacturer, distributor or other certifying agency that issues certifications pursuant to this subpart shall file with the Commission a description of its measurement facilities used for certification.

(b) A copy of each certificate prepared by a manufacturer, distributor or certifying agency shall be filed with the Commission at the time the certificate is prepared.

§ 15.66 *Identification of certificated receivers.* Each certificated receiver shall be identified by a distinctive seal or label, which may be a part of the name plate and which shall state that the receiver has been certificated for compliance with the requirements of this subpart. The seal or label shall be permanently attached to the receiver and shall be readily visible for inspection by prospective purchasers.

§ 15.67 *Operation of radio receivers aboard a ship.* In addition to meeting the requirements of this part, a radio receiver operated aboard a ship shall also meet the requirements of Part 8 of this chapter.

§ 15.68 *Effective date of this subpart.* VHF television broadcast receivers manufactured after May 1, 1956, shall comply with the certification requirements of this subpart, except that compliance with the power line interference limits for frequencies between 3 Mc and 25 Mc is required for such receivers manufactured after December 31, 1957. All other radio receivers that operate (tune) in the range 30 to 890 Mc manufactured after October 1, 1956, shall comply with the certification requirements of this subpart, except as follows:

(a) FM broadcast receivers manufactured after December 31, 1956, shall comply with the certification requirements with respect to frequencies above 25 Mc. All such receivers manufactured after December 31, 1957, shall comply with the certification requirements with respect to all frequencies.

(b) UHF television broadcast receivers manufactured after December 31, 1957, shall comply with the certification requirements of this subpart; *Provided, however,* that the limit 500 uv/m appearing in the table contained in § 15.62 of this part is temporarily increased to 1,000 uv/m for all UHF television receivers until December 31, 1958.

(c) The radiation interference limits and the certification requirement with respect thereto shall be met by all pocket type super-regenerative receivers used in the one-way signalling services as defined in Part 6 of this chapter which are manufactured after December 31, 1956.

§ 15.69 *Interference from a radio receiver.* The operator of a radio receiver, regardless of tuning range, date of manufacture, or of certification, which causes harmful interference shall promptly take steps to eliminate the harmful interference.

SUBPART D—COMMUNITY ANTENNA TELEVISION SYSTEMS

§ 15.161 *Radiation from a community antenna television system.* Radiation from a community antenna television system shall be limited as follows:

Frequencies (Mc)	Distance (ft.)	Radiation limits (uv/m)	
		General requirement	Sparsely inhabited areas [1]
Up to and including 54	100	15	15
Over 54 up to and including 132	10	20	400
Over 132 up to and including 216	10	50	1,000
Over 216	100	15	15

[1] For the purpose of this section, a sparsely inhabited area is an area where television broadcast signals are not, in fact, being received within 1,000 feet of any part of the community antenna television system.

§ 15.162 *Demonstration of compliance.* The operator of each CATV system shall be responsible for insuring that each such system is designed, installed and operated in a manner which fully complies with the provisions of this subpart. Each system operator shall be prepared to show, upon reasonable demand by an authorized representative of the Commission, that the system does, in fact, comply with the rules.

§ 15.163 *Interference from a community antenna television system.* In the event that the operation of a community antenna television system causes harmful interference to reception of authorized radio stations the operator of the system shall immediately take whatever steps are necessary to remedy the interference.

§ 15.164 *Responsibility for receiver generated interference.* Interference originating in a radio receiver shall be the responsibility of the receiver operator in accordance with the provisions of Subpart C of this part: *Provided, however,* That the operator of the community antenna television system to which the receiver is connected shall be responsible for the suppression of receiver generated interference that is distributed by the system when this interference is conducted into the system at the receiver.

§ 15.165 *Measurement of field strength.* Measurements to determine the field strength of radio frequency energy generated by community antenna television systems shall be made in accordance with standard engineering procedures. Measurements made above 25 megacycles shall include the following:

(a) A field strength meter using a horizontal dipole antenna shall be employed.

(b) Field strength shall be expressed in terms of the RMS value of synchronizing peak.

(c) The dipole antenna shall be placed 12 feet above the ground and positioned directly below the system components. Where such placement results in a separation of less than 10 feet between the center of the dipole antenna and the system components, the dipole shall be repositioned to provide a separation of 10 feet.

(d) The horizontal dipole antenna shall be rotated about a vertical axis and the maximum meter reading shall be used.

(e) Measurements shall be made where other conductors are 10 or more feet away from the measuring antenna.

§ 15.166 *Effective date of radiation limits in this subpart.* (a) The radiation limits for community antenna television systems shall be met by all new systems whose construction begins on or after October 1, 1956, and by all new sections added to existing systems whose construction begins on or after October 1, 1956.

(b) Community antenna television systems in existence on September 30, 1956, shall comply with the radiation limits in this subpart not later than December 31, 1959: *Provided,* That any harmful interference to the reception of authorized radio stations caused by such systems shall be promptly remedied during this period by the operator of the CATV system.

SUBPART E—LOW POWER COMMUNICATION DEVICES

§ 15.201 *Frequencies of operation.* (a) A low power communication device may be operated on any frequency in the bands 10–490 kc, 510–1600 kc and 26.97–27.27 Mc.

(b) Other frequencies above 70 Mc may be used for operations of short duration in accordance with the requirements set forth in § 15.206.

§ 15.202 *Radiation limitation below 1600 kc.* A low power communication device which operates on any frequency between 10 and 490 kc or between 510 and 1600 kc shall limit the radiation so that the field strength does not exceed the value specified in the following table:

Frequency (kc)	Distance (feet)	Field strength (uv/m)
10–490	1,000	$\frac{2400}{F(kc)}$
510–1600	100	$\frac{24000}{F(kc)}$

= 4.615 uv/m at 520 kc.

§ 15.203 *Alternative requirement for operation on frequencies between 160 kc and 190 kc.* In lieu of meeting the radiation limitation, stated in § 15.202, a low power communication device operating on a frequency between 160 and 190 kc need only meet the following requirements:

(a) The power input to the final radio frequency stage (exclusive of filament or heater power) does not exceed one watt.

(b) All emissions below 160 kc or above 190 kc are suppressed 20 db or more below the unmodulated carrier.

(c) The total length of the transmission line plus the antenna does not exceed 50 feet.

§ 15.204 *Alternative requirement for operation on frequencies between 510 and 1600 kc.* In lieu of meeting the radiation limitation stated in § 15.202, a low power communication device operating on a frequency between 510 and 1600 kc inclusive need only meet the following requirements:

(a) The power input to the final radio stage (exclusive of filament or heater power) does not exceed 100 milliwatts.

(b) The emissions below 510 kc or above 1600 kc are suppressed 20 db or more below the unmodulated carrier.

(c) The total length of the transmission line plus the antenna does not exceed 10 feet.

(d) Low power communication devices obtaining their power from the lines of public utility systems shall limit the radio frequency voltage appearing on each power line to 200 microvolts or less on any frequency from 510 kc to 1600 kc. Measurements shall be made from each power line to ground both with the equipment grounded and with the equipment ungrounded.

NOTE: One method of determining radio frequency voltage on the power line is described in "Military Specification for Interference Measurement" MIL–I–16910 (SHIPS) dated January 14, 1952, available from the Commanding Officer, Naval Supply Depot, Scotia 2, New York. Note that this procedure calls for grounding the equipment under test, whereas the Commission's rules call for measurements both with the equipment grounded and with the equipment ungrounded.

§ 15.205 *Operation within the frequency band 26.97–27.27 Mc.* A low power communication device may operate within the band 26.97–27.27 Mc (27.12 Mc±150 kc) provided it complies with all of the following requirements:

(a) The carrier of the device shall be maintained within the band 26.97–27.27 Mc.

(b) All emissions, including modulation products, below 26.97 Mc or above 27.27 Mc shall be suppressed 20 db or more below the unmodulated carrier.

(c) The power input to the final radio stage (exclusive of filament or heater power) shall not exceed 100 milliwatts.

(d) The antenna shall consist of a single element that does not exceed 5 feet in length.

§ 15.206 *Operation above 70 Mc.* A low power communication device may be operated on any frequency above 70 Mc. provided it complies with all of the following conditions:

(a) Operation is limited to one second duration and to occur not more than once in 30 seconds.

(b) The radiated field on any frequency from 70 Mc to 1000 Mc does not exceed the limits specified for receivers in § 15.62.

(c) The radiated field on any frequency above 1000 Mc does not exceed 500 microvolts per meter at a distance of 100 feet.

(d) The device is provided with means for automatically limiting operation within the time restrictions specified in this section.

§ 15.207 *Class B emission prohibited.* Operation of low power communication devices that produce Class B emissions (damped waves) is prohibited.

§ 15.208 *Certification requirements.* (a) No low power communication device manufactured after January 1, 1958 shall be operated without a station license unless it has been certificated to demonstrate compliance with the requirements in this part.

(b) The owner or operator need not certificate his own low power communication device, if it has been certificated by the manufacturer or distributor.

(c) Where certification is based on measurement of a prototype, a sufficient number of units shall be tested to assure that all production units comply with the technical requirements of this subpart.

(d) The certificate may be executed by a technician skilled in making and interpreting the measurements that are required to assure compliance with the requirements of this part.

(e) The certificate shall contain the following information:

(1) The operating conditions under which the device is intended to be used.

(2) The antenna to be used with the device.

(3) A statement certifying that the device can be expected to comply with the requirements of this subpart under the operating conditions specified in the certificate.

(4) The month and year in which the device was manufactured.

§ 15.209 *Location of certificate.* The certificate shall be permanently attached to the device and shall be readily visible for inspection.

§ 15.210 *Interference from low power communication devices.* Notwithstanding the other requirements of this part, the operator of a low power communication device, regardless of date of manufacture, which causes harmful interference to an authorized radio service, shall promptly stop operating the device until the harmful interference has been eliminated.

[F. R. Doc. 57-7729; Filed, Sept. 19, 1957; 8:50 a. m.]

Form CE-16G
July 1958

FEDERAL COMMUNICATIONS COMMISSION

LOW POWER COMMUNICATION DEVICES

Example: Wireless microphone, phonograph oscillator, radio controlled garage door opener and radio controlled models.

Such devises may be operated without a license provided they do not cause interference to the reception of licensed radio stations and, additionally, comply with the requirements set forth in Subpart E of Part 15 of the Commission's Rules. Operation is limited to the bands 10-490 kc, 510-1600 kc, 26.97-27.27 Mc. Under special conditions, frequencies above 70 Mc may also be used.

Subpart E limits radiation, power and length of antenna so that operation beyond a few hundred feet cannot be expected. The rules also require that low power communication devices be CERTIFICATED. The certificate may be executed by a technician skilled in making and interpreting the measurements that are required to assure compliance with the Commission's technical requirements.

WHRC — 690 kc.

Haverford College, Haverford, Penna.

PROGRAM SCHEDULE-LOG

Date ______________________________ Day of Week ______________________________

	SCHED TIME	AIR TIME	PROGRAM (SPONSOR)	PRODUCER (ANNOUNCER)	ENGINEER	TYPE	ORI-GIN	REMARKS

TYPE

C — *Commercial*
S — *Sustaining*

DI — *Discussion*
RE — *Recorded*
LT — *Live Talent*

SB — *Station Break*
CL — *Classical*
SC — *Semi-Classical*
DJ — *Disc-Jockey*

ORIGIN

ET — *Transcription*
T — *Tape*
N — *Remote*

Enter description of program aired in alternate space if different from program scheduled.

Engineer sign and initial log.

COMINS PRINTING

FEDERAL COMMUNICATIONS COMMISSION
Safety and Special Radio Services Bureau
Washington 25, D. C.

SS BULLETIN 1001a
February 1961

PERMISSIBLE COMMUNICATIONS IN THE CITIZENS RADIO SERVICE

Your attention is called to Part 19, Citizens Radio Service, of the Commission's Rules regarding the type of communications that are permitted by licensees of Citizens Radio stations. Sections 19.1, 19.2(a), and 19.61 of these Rules clearly indicate that the Citizens Radio Service is for *PRIVATE SHORT-DISTANCE RADIOCOMMUNICATIONS BETWEEN UNITS OF THE SAME STATION OR OTHER STATIONS LICENSED IN THIS SERVICE, LIMITED TO THE MINIMUM PRACTICABLE TRANSMISSION TIME.*

The information required by Item 9 of FCC Form 505 must show ***specifically*** in connection with what business or other activity radio is to be used and the purpose and manner of such use. It must be remembered that stations in this service are licensed to fulfill a ***definite need for communications in connection with business or personal activities.***

The Commission's monitoring stations are continuing to detect violations of the Citizens Radio Service Rules and are issuing large numbers of citations to licensees. The violations cited fall mainly into two large groups -- off-frequency operation and the use of Citizens Radio Service stations for communications which are not permissible under the rules.

PERMISSIBLE COMMUNICATIONS: Most citations for improper use result from the mistaken belief that the Citizens Radio Service (particularly the Class D station) is similar to the Amateur Radio Service with respect to permissible communications and that certain amateur-type communications (such as calling CQ, contacting distant stations for the sole purpose of talking to someone that far away, transmitting merely for the amusement of the operator, radio experimentation and on-the-air discussions of radio equipment, etc.) are permitted. ***Nothing is further from the truth.*** Class A, Class B, and Class D stations are authorized ***to communicate primarily with other units of the same station,*** and secondarily with units of other stations in the Citizens Radio Service ***only*** when ***necessary*** for the exchange of ***substantive*** messages related to the business or personal activities of ***both*** the licensees concerned. Paragraph (c) of Section 19.61 states, with certain minor exceptions, that "...no station in this service shall be used for the transmission of any communication or signal other than those concerning the business activities or personal affairs of the licensee...". Accordingly, except in emergencies, a licensee may not normally use his station to transmit messages for other persons (not even routine messages for his employer) regardless of whether or not any compensation is received for such use.

The Citizens Radio Service was set up by the Commission on a regular basis in 1947. At that time frequencies were made available only in the 460-470 Mc band. Later, one other frequency, 27.255 Mc, was made available for control (not communications) purposes only. In September 1958, two new groups of frequencies (one group for control purposes and the other for voice communications) were made available. However, control stations are licensed as "Class C" and voice stations as "Class D". No changes were made in the scope of permissible communications.

(Over)

The new frequencies were set up in a band formerly assigned to the Amateur Radio Service in the 27 Mc region. For this reason it seems likely that the former association of these frequencies with the Amateur Radio Service is partly responsible for the misunderstandings regarding the use of Class D stations. However, persons desiring to pursue radiocommunication as a hobby should refer to Part 12 of the Commission's Rules and should apply for a license in the Amateur Radio Service.

Licensees should remember that:

The Citizens Radio Service was set up to provide for the radiocommunication *needs* of the citizens of the United States much on the same basis as a party-line telephone, and Citizens Radio stations must be used with the same consideration for other users.

Emergency communications have priority.

The Amateur Radio Service is available to all citizens of the United States who are interested enough to qualify themselves -- and the knowledge and code skills required to obtain a Novice Class "ham" license are easily acquired.

Citizens Radio, properly used, is a valuable communications tool for the professional man (such as the doctor and the engineer), the small businessman, and the plain citizen. Improperly used, it can be made worthless to everyone because of excessive interference.

Continued violations of the rules will result in license revocation and loss of all operating privileges.

DON'T PUT YOUR CITIZENS RADIO TRANSMITTER ON THE AIR UNLESS YOU HAVE A MESSAGE WHICH YOU *NEED* TO SEND.

It is the licensee's responsibility to see that his equipment is at all times operating in accordance with the Citizens Radio Service Rules. Off-frequency operation can be guarded against by having measurements made by a service engineer or other person who has the proper frequency-measuring equipment and the skill required to use it. How often this need be done depends upon the equipment used. Some equipment may require daily checks, whereas more stable equipment may not require frequency checks for periods as long as six months.

DON'T TAMPER WITH THE EQUIPMENT. A licensed commercial operator of an appropriate class is required for any adjustments that might affect the proper operation of the station. (See Section 19.71).

(COPIES OF THIS BULLETIN CANNOT BE SUPPLIED IN QUANTITY: HOWEVER, IT MAY BE REPRODUCED IN WHOLE OR IN PART BY ANYONE INTERESTED.)

F.C.C. - WASHINGTON, D. C.

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON 25, D. C.

OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, $300

2 (a) Name (see instructions)

Haverford Radio WHRC

Haverford College
Haverford, Delaware Co., Pa.

FCC Form 505
September 1958

Form Approved
Budget Bureau No. 52-R123.8

CITIZENS RADIO LICENSE

This authorization permits the use only of transmitters which: (1) Are listed under Special Conditions below, (2) appear in the Commission's "Radio Equipment List, Part C", or (3) in the case of Class C or Class D stations, are crystal controlled.

1(a) FREQUENCIES	1(b) EMISSION	1(c) NO. OF TRANSMITTERS		
		BASE	MOBILE	FIXED
Class B	Class B		2	

2(a) Name (see instructions)
Haverford Radio WHRC

(b) Mailing address (number, street, city, zone, county, state)
Haverford College
Haverford, Delaware Co., Pa.

3. Location of transmitter(s) at a fixed location
Number and street (or other indication of location)

City	County	State

Latitude ° ' " N	Longitude ° ' " W

4. Class of station (Check one)

A ☐
B ☒
C ☐
D ☐

AUTHORIZATION

FOR COMMISSION USE ONLY

K A G 0305
CALL SIGN

5. If mobile units, or other class of station at temporary locations, are included in this authorization, show area of operation

Haverford College, Haverford, Pa. and vicinity

6. Location of control point(s)

FOR COMMISSION USE ONLY

Special Conditions:

This license becomes invalid if, at any time, an alien becomes an officer of the association, and/or aliens become one-fifth or more of the total membership. In either case it must be returned to the Commission for cancellation.

Term of authorization: This authorization is effective April 27, 1962 and will expire 3:00 A. M. EST. April 27, 1967 and is subject to further conditions as set forth on reverse side.

By direction of the FEDERAL COMMUNICATIONS COMMISSION

lt

Ben F. Waple
Acting SECRETARY

CONDITIONS OF GRANT

A. Subject to the provisions of the Communications Act of 1934, as amended, subsequent acts, treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to the conditions and requirements set forth in this authorization the licensee or permittee hereof is authorized to use and operate the radio transmitting facilities herein described. This authorization shall not vest in the licensee or permittee any right to operate the station nor any right in the use of the frequencies designated in the authorization beyond the term hereof, nor in any other manner than authorized herein.

B. Neither this authorization nor the right granted herein shall be assigned or otherwise transferred to any person, firm, company, or corporation.

C. This authorization is issued on the licensee's representation that the statements contained in licensee's application are true and that the undertakings therein contained, so far as they are consistent herewith, will be carried out in good faith. The licensee shall, during the term of this license, render such service as will serve public interest, convenience, or necessity to the full extent of the privileges herein conferred.

D. This authorization is subject to the right of use or control by the Government of the United States conferred by Section 606 of the Communications Act of 1934, as amended.

WARNING

When you accept this license you agree to accept all interference received from existing and future licensees in Citizens radio and from other sources.

Discontinue operation immediately should the equipment fail to function in a normal manner.

Don't tamper with equipment.

Don't make unnecessary transmissions. Remember that Citizens radio communications are in a "party line" system which requires cooperation of all users.

The transmission of profane, indecent, or obscene language is prohibited by law and severe penalities are provided for violators.

You may not engage in either broadcasting or in communications for hire.

When you change your permanent address, you must obtain a new license showing your new address.

Before you erect any antenna the tip of which is more than 20 feet above the ground or other natural formation or existing structure (building, water tower, trees, etc.) you must apply for a new license. This is so the Commission may check the proposed antenna structure for hazards to aircraft.

It's your responsibility to see that the station is properly operated at all times.

Keep informed. Your license may be revoked for failure to comply with the law and the Commission's Rules.

FEDERAL COMMUNICATIONS COMMISSION OCE BULLETIN NO. 11

WASHINGTON 25, D. C. June 1961

MINIATURE TRANSMITTERS

Increasing quantities and varieties of miniature transmitters, characterized by small size, light weight, and low power are being offered to the public. *EXCEPT AS PROVIDED BY PART 15 OF THE COMMISSION'S REGULATIONS, THESE TRANSMITTERS MUST BE LICENSED BEFORE THEY CAN BE OPERATED LEGALLY.*

UNLICENSED OPERATION: Subpart E of Part 15, *LOW POWER COMMUNICATION DEVICES,* makes provision for unlicensed operation of devices such as wireless microphones, phonograph oscillators, telemetering transmitters, radio garage door controls, and other related equipment, subject to three conditions:

1. That no harmful interference is caused to licensed operations;
2. That the transmitter complies with the technical specifications in Part 15, and
3. That the device is certificated as complying with the requirements of Part 15.

Section 15.201 lists the frequencies that may be used. Other Sections of Part 15 list the maximum signal that may be radiated or the power and antenna length that may be used.

There are no restrictions on the type of modulation that may be used or on frequency stability. Care must be taken, however, that the signals transmitted by the device stay within the designated band. The device may be used for any legitimate endeavor. An operator's permit is not required for operation of a *LOW POWER COMMUNICATION DEVICE.*

A *CERTIFICATE* attesting that the transmitter complies with Part 15 must be attached to each *LOW POWER COMMUNICATION DEVICE* before operation is permissible. Conscientious and informed manufacturers normally test prototype transmitters for compliance with Part 15 and attach appropriate certificates to devices offered for sale. *PURCHASERS OF MINIATURE TRANSMITTERS INTENDED FOR OPERATION WITHOUT A LICENSE UNDER PART 15 SHOULD MAKE SURE THAT THE DEVICES WHICH THEY PURCHASE HAVE BEEN CERTIFICATED BY THE MANUFACTURER.*

CITIZENS RADIO SERVICE: Miniature transmitters may be operated under a station license in the Citizens Radio Service (FCC Rules Part 19) for personal or business short distance communications, subject to the limitations in that Part. *A CITIZENS RADIO STATION, OR ANY UNIT THEREOF, MAY COMMUNICATE ONLY WITH OTHER UNITS OF THE SAME STATION OR WITH UNITS OF ANOTHER CITIZENS RADIO STATION.*

The 27 Mc band in the Citizens Radio Service is limited to use for the remote control of objects or devices by radio (Class C stations) or for voice communications (Class D stations). Frequencies in the 460-470 Mc band are available also for the above uses by Class A or Class B stations, but are subject to different limitations.

See Part 19 of the Commission's Rules for detailed information concerning licensing procedure, technical requirements and operating restrictions.

OTHER LICENSED OPERATION: Miniature transmitters may be licensed under other Parts of the Commission's Regulations when the equipment is to be used for communications in a specific activity to which the regulations apply. See Part 9 for use and licensing in the Aviation Services; Part 10 for licensing in police, fire, and related fields in Public Safety Services; Part 11 for licensing in an industrial enterprise; and Part 16 for licensing in transportation activities.

Equipment intended to be used under Parts 9, 10, 11 or 16 must have been Type Accepted for Licensing. Type acceptance of equipment is based on representations and test data submitted to the Commission by the manufacturer or the user. The lists of type accepted equipment are revised periodically, and are available for inspection at the Commission's offices in Washington, D. C., and at each of its field offices. Procedure for type acceptance of equipment is contained in Subpart F of Part 2 of the Commission's Rules.

(OVER)

WIRELESS MICROPHONES: Wireless microphones, including the type worn on lapels or concealed in the clothing, are miniature transmitters designed to transmit the output of a microphone to a public address system, or to a transmitter for broadcasting.

(a) *Unlicensed Operation.* Wireless microphones certificated as complying with the requirements of Part 15 may be used in any legal endeavor.

(b) *Licensed Use.* Various Commission Rules make provision for licensed use of wireless microphones. *To illustrate,* a lecturer, square dance caller or entertainer may apply for a license under Subpart L of Part 11 if he meets the eligibility requirements in the Business Radio Service; a person eligible in the Motion Picture Radio Service may apply for a license under Subpart I of Part 11; wireless microphones used by AM, FM and TV broadcast stations may be licensed under Section 4.437 of Part 4.

TELEMETERING TRANSMITTERS: Another use for miniature transmitters is in *telemetering.* This is a form of communication in which information collected by various sensing devices is transmitted to a nearby receiver-recorder. Telemetering transmitters are generally used in places where it is impossible or very costly to connect the sensing device to the recorder by cable or where the wire would constitute a hazard. In industry, for example, telemetering transmitters have been used to record the readings of strain gauges attached to the rotors of large machines. In medical research they have been used to record physiological data--heart action, blood pressure, respiratory rate, body temperature--of active human and animal subjects.

(a) *Unlicensed Operation.* Telemetering transmitters certificated as complying with the requirements of Part 15 may be used in any legal endeavor.

(b) *Licensed Use.* Eligible applicants may apply for a license to operate a telemetering station under the Rules governing an established radio service, such as Industrial, Public Safety, etc.

(c) *Experimental Operation.* To the extent that telemetering is used in an experimental or research project as in medical research, a telemetering transmitter may be licensed in the Experimental Research Service under Section 5.201 of Part 5 for "communications in connection with research projects when existing communications facilities are inadequate". A station in Experimental Research Service may be assigned frequencies allocated to the broadcast service, the fixed service, or the land mobile service on a non-interference basis. See Part 5 for the application procedure.

AVAILABILITY OF RULES: The various Rules and Regulations of the FCC may be obtained from the Government Printing Office, Washington 25, D. C., at the prices shown:

Volume II comprising Parts 2, 5, 15 and 18	$2.00
Volume III comprising Parts 3 and 4	$4.00
Volume V comprising Parts 9, 10, 11 and 16	$2.50
Volume VI comprising Parts 12, 19 and 20	$1.25

These Regulations are also published in Title 47 of the Code of Federal Regulations available in any law library.

Attachments: Form CE-16E
Citizens Radio Service, SS Bulletin 1001

F.C.C. - WASHINGTON, D. C.

WHRC — 690 kc.

Haverford College, Haverford, Penna.

PROGRAM SCHEDULE-LOG

Date ____________________

Day of Week ____________________

	SCHED TIME	AIR TIME	PROGRAM (SPONSOR)	PRODUCER (ANNOUNCER)	ENGINEER	TYPE	ORI-GIN	REMARKS

TYPE

C — *Commercial*
S — *Sustaining*

DI — *Discussion*
RE — *Recorded*
LT — *Live Talent*

SB — *Station Break*
CL — *Classical*
SC — *Semi-Classical*
DJ — *Disc-Jockey*

ORIGIN

ET — *Transcription*
T — *Tape*
N — *Remote*

Enter description of program aired in alternate space if different from program scheduled.

Engineer sign and initial log.

COMINS PRINTING

WHRC — 690 kc.

Haverford College, Haverford, Penna.

PROGRAM SCHEDULE-LOG

Date ______________________________

Day of Week ______________________________

	SCHED TIME	AIR TIME	PROGRAM (SPONSOR)	PRODUCER (ANNOUNCER)	ENGINEER	TYPE	ORI-GIN	REMARKS

TYPE

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SB — *Station Break*
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ORIGIN

ET — *Transcription*
T — *Tape*
N — *Remote*

Enter description of program aired in alternate space if different from program scheduled.

Engineer sign and initial log.

COMINS PRINTING

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON 25, D. C.

December 19, 1961

ADDRESS ALL COMMUNICATIONS
TO THE SECRETARY

IN REPLY REFER TO:
7500

Mr. Roger L. Kohn
Technical Director
Radio Station WHRC
Box 184
Haverford College
Haverford, Pennsylvania

Dear Sir:

In reply to your letter of November 16, 1961, it appears that your "campus broadcasting station" is operated under the provisions of Part 15 of the Commission's Rules - Incidental and Restricted Radiation Devices.

If such is the case, or if the station is operated under a license issued by the Commission, stations licensed in the Citizens Radio Service are not permitted to intercommunicate therewith. In this connection, reference is made to Section 19.61(a) of the Citizens Radio Service rules. Such prohibited intercommunication would include use of the citizens radio station for program pick-up, or any other form of direct relay.

It would be permissible for a citizens radio station licensed in the name of the college to be used to transmit information concerning collegiate activities from one point to another if, at the receiving point, the information were to be edited or otherwise screened and then used by an announcer at that point. The direct rebroadcast or the use of a recorded copy of the transmission of the citizens radio station, however, would not be permitted.

The question as to whether the college itself or the radio station association should be the licensee, can best be determined by you. Both corporations and associations are eligible to hold licenses if they meet the citizenship requirements. The fact that the membership of the association changes is not material so long as no officer or director is an alien and less than one-fifth of the members are aliens. The deciding factor is whether the citizens radio station is intended only to be used in connection with the activities of the college radio station or with the activities of the college generally. In the latter case, the college must be the licensee.

Very truly yours,

Ben F. Waple

Ben F. Waple
Acting Secretary

Attachment:

[Reprinted from FEDERAL REGISTER of July 4, 1953]

FEDERAL COMMUNICATIONS COMMISSION

Part 3—Rules Governing Radio Broadcast Services

(Revised to June 30, 1953)

TITLE 47—TELECOMMUNICATION

Chapter I—Federal Communications Commission

PART 3—RADIO BROADCAST SERVICES

The Commission, by order dated and made effective June 30, 1953, editorially revised Part 3 of its Rules and Regulations to read as set forth below.

FEDERAL COMMUNICATIONS
COMMISSION,
T. J. SLOWIE,
Secretary.

SUBPART A—RULES GOVERNING STANDARD BROADCAST STATIONS

DEFINITIONS

Sec.
3.1 Standard broadcast station.
3.2 Standard broadcast band.
3.3 Standard broadcast channel.
3.4 Dominant station.
3.5 Secondary station.
3.6 Daytime.
3.7 Nighttime.
3.8 Sunrise and sunset.
3.9 Broadcast day.
3.10 Experimental period.
3.11 Service areas.
3.12 Portable transmitter.
3.13 Auxiliary transmitter.
3.14 Technical definitions.

ALLOCATION OF FACILITIES

3.21 Three classes of standard broadcast channels.
3.22 Classes and power of standard broadcast stations.
3.23 Time of operation of the several classes of stations.
3.24 Broadcast facilities; showing required.

FREQUENCY ALLOCATIONS BY CLASSES OF STATIONS

3.25 Clear channels; Classes I and II stations.
3.26 Regional channels; Classes III–A and III–B stations.
3.27 Local channels; Class IV stations.
3.28 Assignment of stations to channels.
3.29 Class IV stations on regional channels.
3.30 Station location and program origination.
3.31 Authority to move main studio.
3.32 Special experimental authorizations.
3.33 Directional antenna; showing required.
3.34 Normal license period.
3.35 Multiple ownership.

EQUIPMENT

3.41 Maximum rated carrier power; tolerances.
3.42 Maximum rated carrier power; how determined.
3.43 Changes in equipment; authority for.
3.44 Other changes in equipment.
3.45 Radiating system.
3.46 Transmitter.
3.47 Equipment performance measurements.

TECHNICAL OPERATION

Sec.
3.51 Operating power; how determined.
3.52 Operating power; indirect measurement.
3.53 Application of efficiency factors.
3.54 Operating power; direct measurement.
3.55 Modulation.
3.56 Modulation monitors.
3.57 Operating power; maintenance of.
3.58 Indicating instruments.
3.59 Frequency tolerance.
3.60 Frequency monitor.
3.61 New equipment; restrictions.
3.62 Automatic frequency control equipment; authorization required.
3.63 Auxiliary transmitter.
3.64 Alternate main transmitters.
3.65 Antenna structure, marking and lighting.
3.66 Remote control operation.

OPERATION

3.71 Minimum operating schedule.
3.72 Operation during experimental period.
3.73 Specified hours.
3.74 Sharing time.
3.75 Sharing time; equivalence of day and night hours.
3.76 Sharing time; experimental period.
3.77 Sharing time; departure from regular schedule.
3.78 Sharing time stations; notification to Commission.
3.79 License to specify sunrise and sunset hours.
3.80 Secondary station; filing of operating schedule.
3.81 Secondary station; failure to reach agreement.
3.82 Departure from schedule; material violation.
3.83 Local standard time.
3.84 Daylight saving time.
3.85 Changes in time; agreement between licensees.
3.86 Local standard time; license provisions.
3.87 Program transmissions prior to local sunrise.

RULES APPLICABLE TO STATIONS ENGAGED IN CHAIN BROADCASTING

3.101 Exclusive affiliation of station.
3.102 Territorial exclusivity.
3.103 Term of affiliation.
3.104 Option time.
3.105 Right to reject programs.
3.106 Network ownership of stations.
3.107 Dual network operation.
3.108 Control by networks of station rates.
3.109 Special rules relating to contracts providing for reservation of time upon sale of a station.

GENERAL RULES APPLICABLE TO STANDARD BROADCAST STATIONS

3.163 Discontinuance of operation.
3.164 Station and operator licenses; posting of.
3.165 Operator requirements.
3.166 Period of construction.
3.167 Equipment tests.
3.168 Program tests.
3.169 Station inspection.
3.181 Logs.
3.182 Logs; retention of.
3.183 Logs; by whom kept.

Sec.
3.184 Log form.
3.185 Correction of logs.
3.186 Rough logs.
3.187 Station identification.
3.188 Mechanical records.
3.189 Sponsored programs; announcement of.
3.190 Broadcasts by candidates for public office.
3.191 Rebroadcast.
3.192 Lotteries and give-away programs.

SUBPART B—RULES GOVERNING FM BROADCAST STATIONS

CLASSIFICATION OF FM BROADCAST STATIONS AND ALLOCATION OF FREQUENCIES

3.201 Numerical designation of FM broadcast channels.
3.202 Areas of the United States.
3.203 Class A stations.
3.204 Class B stations.
3.205 Station location and program origination.

RULES GOVERNING ADMINISTRATIVE PROCEDURE

3.211 Application for FM broadcast stations.
3.212 Full disclosures.
3.213 Installation of apparatus.
3.214 Period of construction.
3.215 Forfeiture of construction permits: Extension of time.
3.216 Equipment tests.
3.217 Program tests.
3.218 Normal license period.
3.219 License, simultaneous modification and renewal.
3.220 Renewal of license.
3.221 [Reserved.]
3.222 Repetitious applications.
3.223 Assignment or transfer of control.

RULES RELATING TO LICENSING POLICIES

3.231 Exclusive affiliation of station.
3.232 Territorial exclusivity.
3.233 Terms of affiliation.
3.234 Option time.
3.235 Right to reject programs.
3.236 Network ownership of stations.
3.237 Dual network operation.
3.238 Control by networks of station rates.
3.239 Use of common antenna site.
3.240 Multiple ownership.
3.241 Special rules relating to contracts providing for reservation of time upon sale of a station.

RULES RELATING TO EQUIPMENT

3.251 Transmitter power.
3.252 Frequency monitor.
3.253 Modulation monitor.
3.254 Required transmitter performance.
3.255 Auxiliary transmitter.
3.256 Alternate main transmitters.
3.257 Changes in equipment and antenna system.
3.258 Indicating instruments.

RULES RELATING TO TECHNICAL OPERATION

3.261 Time of operation.
3.262 Experimental operation.
3.263 Station inspection.
3.264 Station and operator licenses; posting of.
3.265 Operator requirements.
3.266 Facsimile broadcasting and multiplex transmission.
3.267 Operating power; determination and maintenance of.

Sec.
3.268 Modulation.
3.269 Frequency tolerance.
3.270 Antenna structure, marking and lighting.
3.271 Discontinuance of operation.
3.272 Field intensity measurements.
3.273 Emergency antenna.
3.274 Remote control operation.

OTHER RULES RELATING TO OPERATION

3.281 Logs.
3.282 Logs; retention of.
3.283 Logs; by whom kept.
3.284 Log form.
3.285 Correction of logs.
3.286 Rough logs.
3.287 Station identification.
3.288 Mechanical records.
3.289 Sponsored programs; announcement of.
3.290 Broadcasts by candidates for public office.
3.291 Rebroadcast.
3.292 Lotteries and give-away programs.
Appendix. Standards of good engineering practice concerning FM broadcast stations.

SUBPART C—RULES GOVERNING NONCOMMERCIAL EDUCATIONAL FM BROADCAST STATIONS

CLASSIFICATION OF STATIONS AND ALLOCATION OF FREQUENCIES

3.501 Channels available for assignment.
3.502 State-wide plans
3.503 Licensing requirements and service.
3.504 Frequency, power and service area.
3.505 Standards of good engineering practice.

RULES GOVERNING ADMINISTRATIVE PROCEDURE

3.511 Application for noncommercial educational FM broadcast stations.
3.512 Full disclosures.
3.513 Installation of apparatus.
3.514 Period of construction.
3.515 Forfeiture of construction permits; extension of time.
3.516 Equipment tests.
3.517 Program tests.
3.518 Normal license period.
3.519 License, simultaneous modification and renewal.
3.520 Renewal of license.
3.521 |Reserved.|
3.522 Repetitious applications.
3.523 Assignment or transfer of control.

RULES RELATING TO EQUIPMENT

3.551 Transmitter power.
3.552 Frequency monitor.
3.553 Modulation monitor.
3.554 Transmitter performance.
3.555 Auxiliary transmitter.
3.556 Alternate main transmitters.
3.557 Changes in equipment and antenna system.
3.558 Indicating instruments.

RULES RELATING TO TECHNICAL OPERATION

3.561 Operating schedule.
3.562 Experimental operation.
3.563 Station inspection.
3.564 Station and operator licenses; posting of.
3.565 Operator requirements.
3.566 Facsimile broadcasting and multiplex transmission.
3.567 Operating power; determination and maintenance of.
3.568 Modulation.
3.569 Frequency tolerance.
3.570 Antenna structure, marking and lighting.
3.571 Discontinuance of operation.
3.572 Remote control operation.

OTHER RULES RELATING TO OPERATION

3.581 Logs.
3.582 Logs; retention of.
3.583 Logs; by whom kept.

Sec.
3.584 Log form.
3.585 Correction of logs.
3.586 Rough logs.
3.587 Station identification.
3.588 Mechanical records.
3.589 |Reserved.|
3.590 Broadcasts by candidates for public office.
3.591 Rebroadcast.

SUBPART D—RULES GOVERNING FACSIMILE BROADCAST STATIONS (UNDER PREPARATION)

SUBPART E—RULES GOVERNING TELEVISION BROADCAST STATIONS

GENERAL

3.601 Scope of subpart.
3.602 Other pertinent rules.
3.603 Numerical designation of television channels.

CHANNEL UTILIZATION

3.606 Table of Assignments.
3.607 Availability of channels.
3.608 International agreements.
3.609 |Reserved.|
3.610 Separations.
3.611 Reference points and distance computations.
3.612 Protection from interference.
3.613 Main studio location.
3.614 ower and antenna height requirements.
3.615 Administrative changes in authorizations.

APPLICATIONS AND AUTHORIZATIONS

3.621 Noncommercial educational stations.
3.622 Applications for television stations.
3.623 Full disclosures.
3.624 Repetitious applications.
3.625 Installation of apparatus.
3.626 Period of construction.
3.627 Forfeiture of construction permits; extension of time.
3.628 Equipment tests.
3.629 Program tests.
3.630 Normal license period.
3.631 Renewal of license.
3.632 |Reserved.|
3.633 License, simultaneous modification and renewal.
3.634 Assignment or transfer of control.
3.635 Use of common antenna site.
3.636 Multiple ownership.
3.637 Alternate main transmitters.
3.638 Auxiliary transmitter.
3.639 Changes in equipment and antenna system.

GENERAL OPERATING REQUIREMENTS

3.651 Time of operation.
3.652 Station identification.
3.653 Mechanical reproductions.
3.654 Sponsored programs, announcement.
3.655 Rebroadcast.
3.656 Lotteries and give-away programs.
3.657 Broadcasts by candidates for public office.
3.658 Affiliation agreements.
3.659 Special rules relating to contracts providing for reservation of time upon sale of a station.
3.660 Station license, posting of.
3.661 Operator requirements.
3.662 Antenna structure, marking and lighting.
3.663 Logs; maintenance of.
3.664 Logs; retention of, etc.
3.665 Station inspection.
3.666 Experimental operation.
3.667 Discontinuance of operation.

TECHNICAL STANDARDS

3.681 Definitions.
3.682 Transmission standards and changes.
3.683 Field intensity contours.
3.684 Prediction of coverage.
3.685 Transmitter location and antenna system.

Sec.
3.686 Measurements for rule making purposes and upon request of the Commission.
3.687 Transmitters and associated equipment.
3.688 Indicating instruments.
3.689 Operating power.
Appendix I. Maps of Zones I and III.
Appendix II. Tables for Distance Computations.
Appendix III. Engineering Charts.

SUBPART F—RULES GOVERNING INTERNATIONAL BROADCAST STATIONS

DEFINITION OF INTERNATIONAL BROADCAST STATIONS AND ALLOCATION OF FACILITIES

3.701 Defined.
3.702 Frequency assignments.

RULES GOVERNING ADMINISTRATIVE PROCEDURE

3.711 Application for international broadcast stations.
3.712 Full disclosures.
3.713 Installation or removal of apparatus.
3.714 Period of construction.
3.715 Forfeiture of construction permits; extension of time.
3.716 Equipment tests.
3.717 Program tests.
3.718 Normal license period.
3.719 License; simultaneous modification and renewal.
3.720 Renewal of license.
3.721 |Reserved.|
3.722 Repetitious applications.
3.723 Assignment or transfer of control.

RULES RELATING TO LICENSING POLICIES

3.731 Licensing requirements; necessary showing.

RULES RELATING TO EQUIPMENT

3.751 Power requirement.
3.752 Frequency control.
3.753 Antenna.
3.754 Frequency monitors.
3.755 Modulation monitors.
3.756 Required transmitter performance.
3.757 Auxiliary transmitters.
3.758 Alternate main transmitters.
3.759 Changes in equipment and antenna system.

RULES RELATING TO TECHNICAL OPERATION

3.761 Time of operation.
3.762 Station inspection.
3.763 Station license, posting of.
3.764 Operator requirements.
3.765 Operating power; how determined.
3.766 Modulation.
3.767 Frequency tolerance.
3.768 Antenna structure, marking and lighting.
3.769 Discontinuance of operation.

OTHER RULES RELATING TO OPERATION

3.781 Logs.
3.782 Logs; retention of.
3.783 Logs; by whom kept.
3.784 Log form.
3.785 Correction of logs.
3.786 Rough logs.
3.787 Station identification.
3.788 Service; commercial or sponsored programs.
3.789 Sponsored programs; announcement of.
3.790 Rebroadcast.
3.791 Supplemental report with renewal application.

SUBPART G—RULES GOVERNING CONELRAD

SCOPE AND OBJECTIVES

3.901 Scope of subpart.
3.902 Object of plan.

DEFINITIONS

3.910 CONELRAD.
3.911 Air Defense Control Center (ADCC).

Sec.
3.912 Basic key station.
3.913 Relay key station.
3.914 Skywave key station.
3.915 Radio alert.
3.916 Radio all clear.
3.917 Cluster.
3.918 Sequential control lines.
3.919 CONELRAD manual.

SUPERVISION

3.920 Zones.
3.921 Divisions.

RADIO ALERTS

3.930 Notification of a radio alert.
3.931 Reception of a radio alert.
3.932 Operation during a radio alert.

RADIO ALL CLEAR

3.940 Notification of a radio all clear.

SYSTEM OPERATION

3.950 Procedure.
3.951 Participation.

TESTS

3.960 Alerting system.
3.961 Sequential control lines.
3.962 Entire system.
3.963 Equipment.
3.964 Log entries.

DRILLS

3.970 Notification of a drill.
3.971 Operation during a drill.

AUTHORITY: §§ 3.1 to 3.971 issued under sec. 4, 48 Stat. 1066, as amended; 47 U. S. C. 154.

SUBPART A—RULES GOVERNING STANDARD BROADCAST STATIONS

DEFINITIONS [1]

§ 3.1 *Standard broadcast station.* The term "standard broadcast station" means a broadcasting station licensed for the transmission of radiotelephone emissions primarily intended to be received by the general public and operated on a channel in the band 535–1605 kilocycles.

§ 3.2 *Standard broadcast band.* The term "standard broadcast band" means the band of frequencies extending from 535 to 1605 kilocycles.

§ 3.3 *Standard broadcast channel.* The term "standard broadcast channel" means the band of frequencies occupied by the carrier and two side bands of a broadcast signal with the carrier frequency at the center. Channels shall be designated by their assigned carrier frequencies. The 107 carrier frequencies assigned to standard broadcast stations shall begin at 540 kilocycles and be in successive steps of 10 kilocycles.

§ 3.4 *Dominant station.* The term "dominant station" means a Class I station, as hereinafter defined, operating on a clear channel.

§ 3.5 *Secondary station.* The term "secondary station" means any station except a Class I station operating on a clear channel.

§ 3.6 *Daytime.* The term "daytime" means that period of time between local sunrise and local sunset.

§ 3.7 *Nighttime.* The term "nighttime" means that period of time between local sunset and 12 midnight local standard time.

§ 3.8 *Sunrise and sunset.* The terms "sunrise and sunset" mean, for each particular location and during any particular month, the time of sunrise and sunset as specified in the instrument of authorization.

§ 3.9 *Broadcast day.* The term "broadcast day" means that period of time between local sunrise and 12 midnight local standard time.

§ 3.10 *Experimental period.* The term "experimental period" means that time between 12 midnight and local sunrise. This period may be used for experimental purposes in testing and maintaining apparatus by the licensee of any standard broadcast station on its assigned frequency and with its authorized power, provided no interference is caused to other stations maintaining a regular operating schedule within such period. No station licensed for "daytime" or "specified hours" of operation may broadcast any regular or scheduled program during this period.

§ 3.11 *Service areas.* (a) The term "primary service area" of a broadcast station means the area in which the groundwave is not subject to objectionable interference or objectionable fading.

(b) The term "secondary service area" of a broadcast station means the area served by the skywave and not subject to objectionable interference. The signal is subject to intermittent variations in intensity.

(c) The term "intermittent service area" of a broadcast station means the area receiving service from the groundwave but beyond the primary service area and subject to some interference and fading.

§ 3.12 *Portable transmitter.* The term "portable transmitter" means a transmitter so constructed that it may be moved about conveniently from place to place, and is in fact so moved about from time to time, but not ordinarily used while in motion. In the standard broadcast band, such a transmitter is used in making field intensity measurements for locating a transmitter site for a standard broadcast station. A portable broadcast station will not be licensed in the standard broadcast band for regular transmission of programs intended to be received by the public.

§ 3.13 *Auxiliary transmitter.* The term "auxiliary transmitter" means a transmitter maintained only for transmitting the regular programs of a station in case of failure of the main transmitter.

§ 3.14 *Technical definitions*—(a) *Combined audio harmonics.* The term "combined audio harmonics" means the arithmetical sum of the amplitudes of all the separate harmonic components. Root sum square harmonic readings may be accepted under conditions prescribed by the Commission.

(b) *Effective field.* The term "effective field" or "effective field intensity" is the root-mean-square (RMS) value of the inverse distance fields at a distance of 1 mile from the antenna in all directions in the horizontal plane.

(c) *Operating power.* "Operating power" is the power that is actually supplied to the radio station antenna.

(d) *Maximum rated carrier power.* "Maximum rated carrier power" is the maximum power at which the transmitter can be operated satisfactorily and is determined by the design of the transmitter and the type and number of vacuum tubes used in the last radio stage.

(e) *Plate input power.* "Plate input power" means the product of the direct plate voltage applied to the tubes in the last radio stage and the total direct current flowing to the plates of these tubes, measured without modulation.

(f) *Antenna power.* "Antenna input power" or "antenna power" means the product of the square of the antenna current and the antenna resistance at the point where the current is measured.

(g) *Antenna current.* "Antenna current" means the radio-frequency current in the antenna with no modulation.

(h) *Antenna resistance.* "Antenna resistance" means the total resistance of the transmitting antenna system at the operating frequency and at the point at which the antenna current is measured.

(i) *Modulator stage.* "Modulator stage" means the last amplifier stage of the modulating wave which modulates a radio-frequency stage.

(j) *Modulated stage* "Modulated stage" means the radio-frequency stage to which the modulator is coupled and in which the continuous wave (carrier wave) is modulated in accordance with the system of modulation and the characteristics of the modulating wave.

(k) *Last radio stage.* "Last radio stage" means the oscillator or radio-frequency-power amplifier stage which supplies power to the antenna.

(l) *Percentage modulation (amplitude).* "Percentage modulation" with respect to an amplitude modulated wave means the ratio of half the difference between the maximum and minimum amplitudes of the amplitude modulated wave to the average amplitude expressed in percentage

(m) *Maximum percentage of modulation.* "Maximum percentage of modulation" means the greatest percentage of modulation that may be obtained by a transmitter without producing in its output harmonics of the modulating frequency in excess of those permitted by these regulations.

(n) *High level modulation.* "High level modulation" is modulation produced in the plate circuit of the last radio stage of the system.

(o) *Low level modulation.* "Low level modulation" is modulation produced in an earlier stage than the final.

(p) *Plate modulation.* "Plate modulation" is modulation produced by introduction of the modulating wave into the plate circuit of any tube in which the carrier frequency wave is present.

(q) *Grid modulation.* "Grid modulation" is modulation produced by introduction of the modulating wave into any

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[1] Other definitions which may pertain to standard broadcast stations are included in the Communications Act of 1934, as amended, and in §§ 2.1 and 2.102 of this chapter.

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of the grid circuits of any tube in which the carrier frequency wave is present.

(r)

ALLOCATION OF FACILITIES

§ 3.21 *Three classes of standard broadcast channels*—(a) *Clear channel.* A clear channel is one on which the dominant station or stations render service over wide areas and which are cleared of objectionable interference within their primary service areas and over all or a substantial portion of their secondary service areas.

(b) *Regional channel.* A regional channel is one on which several stations may operate with powers not in excess of 5 kilowatts. The primary service area of a station operating on any such channel may be limited as a consequence of interference to a given field intensity contour.

(c) *Local channel.* A local channel is one on which several stations may operate with powers not in excess of 250 watts. The primary service area of a station operating on any such channel may be limited as a consequence of interference to a given field intensity contour.

§ 3.22 *Classes and power of standard broadcast stations*—(a) *Class I station.* A Class I station is a dominant station operating on a clear channel and designed to render primary and secondary service over an extended area and at relatively long distances. Its primary service area is free from objectionable interference from other stations on the same and adjacent channels, and its secondary service area free from interference except from stations on the adjacent channel, and from stations on the same channel in accordance with the channel designation in § 3.25 or in accordance with the Engineering Standards of Allocation. The operating power shall be not less than 10 kilowatts nor more than 50 kilowatts. (Also see § 3.25 (a) for further power limitation.)

(b) *Class II station.* A Class II station is a secondary station which operates on a clear channel (see § 3.25) and is designed to render service over a primary service area which is limited by and subject to such interference as may be received from Class I stations. A station of this class shall operate with power not less than 0.25 kilowatt nor more than 50 kilowatts. Whenever necessary a Class II station shall use a directional antenna or other means to avoid interference with Class I stations and with other Class II stations, in accordance with the Engineering Standards of Allocation.

(c) *Class III station.* A Class III station is a station which operates on a regional channel and is designed to render service primarily to a metropolitan district[2] and the rural area contiguous thereto. Class III stations are subdivided into two classes.

(1) *Class III–A station.* A Class III–A station is a Class III station which operates with power not less than 1 kilowatt nor more than 5 kilowatts and the service area of which is subject to interference in accordance with the Engineering Standards of Allocation.

(2) *Class III–B station.* A Class III–B station is a Class III station which operates with a power not less than 0.5 kilowatt, and not more than 1 kilowatt night and 5 kilowatts daytime, and the service area of which is subject to interference in accordance with the Engineering Standards of Allocation.

(d) *Class IV station.* A Class IV station is a station operating on a local channel and designed to render service primarily to a city or town and the suburban and rural areas contiguous thereto. The power of a station of this class shall not be less than 0.1 kilowatt nor more than 0.25 kilowatt, and its service area is subject to interference in accordance with the Engineering Standards of Allocation.

§ 3.23 *Time of operation of the several classes of stations.* The several classes of standard broadcast stations may be licensed to operate in accordance with the following:

(a) Unlimited time permits operation without a maximum limit as to time.

(b) Limited time is applicable to Class II (secondary stations) operating on a clear channel only. It permits operation of the secondary station during daytime, and until local sunset if located west of the dominant station on the channel, or if located east thereof, until sunset at the dominant station, and in addition during night hours, if any, not used by the dominant station or stations on the channel.

(c) Daytime permits operation during the hours between average monthly local sunrise and average monthly local sunset. Daytime stations operating on local channels may, upon notification to the Commission and the Engineer in Charge of the radio district in which they are located, operate at hours beyond those specified in their license.

(d) Sharing time permits operation during hours which are so restricted by the station license as to require a division of time with one or more other stations using the same channel.

(e) Specified hours means that the exact operating hours are specified in the license. (The minimum hours that any station shall operate are specified in § 3.71.) Specified hours stations operating on local channels except those sharing time with other stations may, upon notification to the Commission and the Engineer in Charge of the radio district in which they are located, operate at hours beyond those specified in their license.

§ 3.24 *Broadcast facilities; showing required.* An authorization for a new standard broadcast station or increase in facilities of an existing station[3] will be issued only after a satisfactory showing has been made in regard to the following, among others:

(a) That the proposed assignment will tend to effect a fair, efficient, and equitable distribution of radio service among the several states and communities.

(b) That objectionable interference will not be caused to existing stations or that if interference will be caused the need for the proposed service outweighs the need for the service which will be lost by reason of such interference. That the proposed station will not suffer interference to such an extent that its service would be reduced to an unsatisfactory degree. (For determining objectionable interference, see Engineering Standards of Allocation and Field Intensity Measurements in Allocation.)

(c) That the applicant is financially qualified to construct and operate the proposed station.

(d) That the applicant is legally qualified. That the applicant (or the person or persons in control of an applicant corporation or other organization) is of good character and possesses other qualifications sufficient to provide a satisfactory public service.

(e) That the technical equipment proposed, the location of the transmitter, and other technical phases of operation comply with the regulations governing the same, and the requirements of good engineering practice. (See technical regulations herein and Locations of Transmitters of Standard Broadcast Stations.)

(f) That the facilities sought are subject to assignment as requested under existing international agreements and the rules and regulations of the Commission. (g)-OPP.

h (g) That the public interest, convenience, and necessity will be served through the operation under the proposed assignment.

FREQUENCY ALLOCATIONS BY CLASSES OF STATIONS

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§ 3.25 *Clear channels: Class I and II stations.* The frequencies in the following tabulations are designated as clear channels and assigned for use by the classes of stations given:

(a) To each of the channels below there will be assigned one Class I station and there may be assigned one or more Class II stations operating limited time or daytime only: 640, 650, 660, 670, 700, 720, 750, 760, 770, 780, 820, 830, 840, 870, 880, 890, 1020, 1040, 1100, 1120, 1160, 1180, 1200, and 1210 kilocycles. The power of the Class I stations on these channels shall not be less than 50 kilowatts.

(b) To each of the channels below there may be assigned Class I and Class II stations: 680, 710, 810, 850, 940, 1000 1030, 1060, 1070, 1080, 1090, 1110, 1130, 1140, 1170, 1190, 1500, 1510, 1520, 1530, 1550, and 1560 kilocycles.

(c) For Class II stations which will not deliver over 5 microvolts per meter groundwave or 25 microvolts per meter 10 percent time skywave at any point on the Canadian border and provided that such stations operating nighttime (i. e., sunset to sunrise at the location of the Class II station) are located not less than 650 miles from the nearest Canadian opp. p. 6

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[2] The term "metropolitan district" as used in this paragraph is not limited in accordance with the definition given by the Bureau of the Census but includes any principal center of population in any area.

[3] Formal application required (FCC Forms 301 and 302).

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border, 540,[4] 690, 740, 860, 990, 1010,[5]

~~(d) For Class II stations which operate daytime only with power not in excess of 1 kilowatt and which will not deliver over 5 microvolts per meter groundwave at any point on the nearest Mexican border, 730, 800, 900, 1050,[6] 1220,[7] and 1570 kilocycles.~~

~~(e) For Class II stations which will deliver not over 5 microvolts per meter groundwave or 25 microvolts per meter 10 percent time skywave at any point of land in the Bahama Islands, and provided that such stations operating nighttime (i. e., sunset to sunrise at the location of the Class II station) are located not less than 650 miles from the nearest point of land in the Bahama Islands, 1540 kilocycles.~~

§ 3.26 *Regional channels; Classes III–A and III–B stations.* The following frequencies are designated as regional channels and are assigned for use by Class III–A and III–B stations:[8] 550, 560,[9] 570,[9] 580, 590,[9] 600, 610, 620, 630,[9] 790, 910, 920, 930, 950, 960, 970, 980, 1150, 1250, 1260, 1270,[9] 1280, 1290, 1300, 1310, 1320, 1330, 1350, 1360, 1370, 1380, 1390, 1410, 1420, 1430, 1440, 1460, 1470, 1480, 1590, and 1600 kilocycles.

§ 3.27 *Local channels: Class IV stations.* The following frequencies are designated as local channels and are assigned for use by Class IV stations: 1230, 1240, 1340, 1400, 1450, and 1490 kilocycles.

§ 3.28 *Assignment of stations to channels.* (a) The individual assignments of stations to channels which may cause interference to other United States stations only shall be made in accordance with the standards of good engineering practice prescribed and published from time to time by the Commission for the respective classes of stations involved. (For determining objectionable interference see Engineering Standards of Allocation and Field Intensity Measurements in Allocation, sec. C.)

(b) In all cases where an individual station assignment may cause interference with or may involve a channel assigned for priority of use by a station in another North American country, the classifications, allocation requirements and engineering standards set forth in the North American Regional Broadcasting Agreement shall be observed.[9a]

~~§ 3.29 *Class IV stations on regional channels.* No license will be granted for the operation of a Class IV station on a regional channel: *Provided, however,* That (a) Class IV stations presently authorized to operate on regional channels will not be required to change frequency or power but will not be protected against interference from Class III stations and that (b) applications for Class IV assignments on regional channels which were on file prior to December 18, 1952, may be granted on condition that interference will not be caused to any Class III station [9b] and that the Class IV station will be subject to such interference as it may receive from Class III stations.~~

§ 3.30 *Station location and program origination.* (a) Except as provided in paragraph (b) of this section, each standard broadcast station will be licensed to serve primarily a particular city, town, or other political subdivision which will be specified in the station license and the station will be considered to be located in such place. Unless licensed as a synchronous amplifier transmitter, each station shall maintain a studio, which will be known as the main studio, in the place where the station is located provided that the main studio may be located at the transmitter site whether or not the transmitter site is in the place where the station is located. A majority (computed on the basis of duration and not number) of a station's programs or in the case of a station affiliated with a network ⅔ of such station's non-network programs, whichever is smaller, shall originate from the main studio or from other studios or remote points situated in the place where the station is located.

(b) Stations will be licensed to serve more than one city, town, or other political subdivision only where a satisfactory showing is made that each such place meets all the requirements of the rules and Standards of Good Engineering Practice with respect to the location of main studios; that the station can and will originate a substantial number of local live programs from each such

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[4] See § 2.104 (a).

[5] A station on 1010 kilocycles shall also protect a Class I-B station at Havana, Cuba.
and 1580 kilocycles.

[6] See North American Regiona Broadcasting Agreements for use of this channel by a station in New York (appendix I, table IV).

[7] See agreement with Mexico for further use of this channel.

~~[8] See § 3.29 in regard to assigning Class IV station to regional channels.~~ [illegible]

[9] See North American Regional Broadcasting Agreement for special provisions concerning the assigning of Class II stations in other countries of North America to these regional channels. Such stations shall be protected from interference in accordance with appendix II, table I, of said agreement.

[9a] Pending action with respect to ratification and entry into force of the North American Regional Broadcasting Agreement, Washington, 1950 (referred to herein as NARBA), no assignment for a standard broadcast station will be made which would be inconsistent with the terms of that agreement.

On an interim basis while protection by countries not signatory to the NARBA continues for assignments in the United States, no assignment for a standard broadcast station will be made which would cause objectionable interference to a duly notified station in a North American country which is not signatory to the NARBA (i. e., Mexico and Haiti). For purposes of this paragraph, interference will in general be determined, in accordance with the engineering standards in use at the time of the expiration of the Interim Agreement (Modus Vivendi), Treaties and Other International Acts Series 1553. In particular, the existence or absence of interference resulting from skywave signal transmission will be determined by the use of Figures 1 and 6 (a) of the Commission Standards of Good Engineering Practice Concerning Standard Broadcast Stations, and the "50 per cent exclusion" method of calculating RSS interference described in Part 1 of the above Standards. Figure 1 will be utilized in connection with curve #1 of Figure 6 (a) in the determination of 50 percent skywave signals. Figure 1, corrected for radiation at angles above the horizontal by the use of curve #1 of Figure 6 (a), will be used with the highest value of antenna radiation occurring at any pertinent angle between the limits described by curves #4 and #5 of Figure 6 (a) in the determination of 10% skywave signals. The Mexican and Haitian stations considered to be duly notified will be those notified and accepted in accordance with past agreements, and those subsequently notified in substantial accordance with the procedures and understandings that have pertained thus far.

Engineering standards now in force domestically differ in some respects from those specified for international purposes and must be observed in appropriate cases. For example, the engineering standards specified for international purposes will be used to determine (1) the extent to which interference might be caused by a proposed station in the United States to a station in another North American country and (2) whether the United States should register an objection to any new or changed assignment notified by another North American country. The domestic standards in effect in the United States will be used to determine the extent to which interference exists or would exist from a foreign station where the value of such interference (1) enters into a calculation of the service to be rendered by a proposed operation in the United States or (2) enters into the calculation of the permissible interfering signal from one station in the United States towards another United States station.

In general, an application for a standard broadcast station assignment the grant of which would be consistent with provisions of the NARBA and would not cause objectionable interference to a duly notified station in a North American country not signatory to the NARBA, will be considered and acted upon by the Commission in accordance with the established procedure for action upon such applications even though the NARBA may not yet have entered into force. However, in particular cases such applications may also present considerations of an international nature which require that a different procedure be followed. In such cases the procedure to be followed will be determined by the Commission in the light of the special considerations involved.

Special provisions of a procedural nature respecting the consideration of applications for standard broadcast station assignments pending action with respect to ratification and entry into force of NARBA, 1950, and respecting the consideration of applications the grant of which would cause objectionable interference to duly notified stations in countries not signatory to the NARBA, are set out in a note to Part 1 of the rules of the Commission, Subparts D and G.

[9b] The assignment of a Class IV station to a regional channel normally is not considered as making the best usage of the assignment and will be made only when it is shown among other things that—

(1) There are no other transmission facilities in the town or towns in the proposed service area.

(2) There is no local channel assignment available for that area.

(3) Adequate economic support is not available for a Class III station.

(4) It is not practical from an engineering point of view to establish a Class III station and it would not prevent the establishment of any Class III station on that channel or an adjacent channel.

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place; and that the requirements as to origination of programs contained in paragraph (a) of this section would place an unreasonable burden on the station if it were licensed to serve only one city, town, or other political sub-division. A station licensed to serve more than one place shall be considered to be located in and shall maintain main studios in each such place. With respect to such station the requirements as to origination of programs contained in paragraph (a) of this section shall be satisfied by the origination of programs from any or all of the main studios or from other studios and remote points situated in any or all of the places in which the main studios are located.

(c) The transmitter of each standard broadcast station shall be so located that primary service is delivered to the borough or city in which the main studio is located in accordance with the Standards of Good Engineering Practice, prescribed by the Commission.

§ 3.31 *Authority to move main studio.* The licensee of a standard broadcast station shall not move its main studio outside the borders of the borough or city, state, district, territory, or possession in which it is located, unless such move is to the location of the station's transmitter, without first making written application [10] to the Commission for authority to so move, and securing written permission for such removal. The licensee shall promptly notify the Commission of any other change in location of the main studio.

§ 3.32 *Special experimental authorizations.* (a) Special experimental authorization may be issued to the licensee of a standard broadcast station in addition to the regular license upon informal application therefor and upon a satisfactory showing in regard to the following, among others:

(1) That the applicant has a program of research and experimentation which indicates reasonable promise of contribution to the development and practical application of broadcasting, and will be in addition to and advancement of the work that can be accomplished under its regular license.

(2) That the experimental operation and experimentation will be under the direct supervision of a qualified engineer with an adequate staff of engineers qualified to carry on the program of research and experimentation.

(3) That the public interest, convenience, and necessity will be served by granting the authorization requested.

(b) In case a special experimental authorization permits additional hours of operation, no licensee shall transmit any commercial or sponsored program or make any commercial announcement during such time of operation. In case of other additional facilities, no additional charge shall be made by reason of transmission with such facilities.

(c) A special experimental authorization will not be extended after the actual experimentation is concluded.

(d) The program of research and experimentation as outlined in the application for a special experimental authorization shall be adhered to in the main unless the licensee is authorized to do otherwise by the Commission.

(e) The Commission may require from time to time a broadcast station holding such experimental authorization to conduct experiments that are deemed desirable and reasonable.

(f) A supplemental report shall be filed with and made a part of each application for an extension of a special experimental authorization and shall include statements of the following:

(1) Comprehensive summary of all research and experimentation conducted.

(2) Conclusions and outline of proposed program for further research and development.

(3) Comprehensive summary and conclusions as to the social and economic effects of its use.

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~~§ 3.33 *Directional antenna; showing required.* (a) No application for authority to install a directional antenna [11] will be accepted unless a definite site and full details of the design of the directional antenna are given with the application. (See Data Required With Applications Involving Directional Antenna Systems.)~~

~~(b) No application for an authorization to operate a directional antenna during the broadcast day will be accepted unless proof of performance of the directional antenna taken during equipment test period is submitted with the application. (See Field Intensity Measurements in Allocation, sec. B.)~~

§ 3.34 *Normal license period.* (a) All standard broadcast station licenses will be issued for a normal license period of three years. Licenses will be issued to expire at the hour of 3:00 a. m., e. s. t., in accordance with the following schedule and at three-year intervals thereafter.[1]

(1) For stations located in Delaware and Pennsylvania, August 1, 1951.

(2) For stations located in Maryland, District of Columbia, Virginia, West Virginia, October 1, 1951.

(3) For stations located in North Carolina, South Carolina, December 1, 1951.

(4) For stations located in Florida, Puerto Rico and Virgin Islands, February 1, 1952.

(5) For stations located in Alabama and Georgia, April 1, 1952.

(6) For stations located in Arkansas, Louisiana and Mississippi, June 1, 1952.

(7) For stations located in Tennessee, Kentucky and Indiana, August 1, 1952.

(8) For stations located in Ohio and Michigan, October 1, 1952.

(9) For stations located in Illinois and Wisconsin, December 1, 1952.

(10) For stations located in Iowa and Missouri, February 1, 1953.

(11) For stations located in Minnesota, North Dakota, South Dakota, Montana and Colorado, April 1, 1953.

(12) For stations located in Kansas, Oklahoma, Nebraska, June 1, 1953.

(13) For stations located in Texas, August 1, 1953.

(14) For stations located in Wyoming, Nevada, Arizona, Utah, New Mexico and Idaho, October 1, 1953.

(15) For stations located in California, December 1, 1953.

~~(16) For stations located in Washington, Oregon, Alaska and Hawaii, February 1, 1954.~~

(17) For stations located in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont, April 1, 1954.

(18) For stations located in New Jersey and New York, June 1, 1954.

(b) When an application is granted by the Commission necessitating the issuance of a modified license less than 60 days prior to the expiration date of the license sought to be modified, and an application for renewal of said license is granted subsequent or prior thereto (but within 30 days of expiration of the present license) the modified license as well as the renewal license shall be issued to conform to the combined action of the Commission.

§ 3.35 *Multiple ownership.* No license shall be granted for a standard broadcast station, directly or indirectly owned, operated or controlled [12] by any person [13] where such station renders or will render primary service to a substantial portion of the primary service area of another standard broadcast station, directly or indirectly owned, operated or controlled by such person, except upon a showing that public interest, convenience, and necessity will be served through such multiple ownership situation.

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EQUIPMENT

§ 3.41 *Maximum rated carrier power; tolerances.* The maximum rated carrier power of a standard broadcast transmitter shall not be less than the authorized power nor shall it be greater than the value specified in the following table:

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[1] Renewals of licenses will be granted for the period specified in the rule: *Provided, however,* That if as a result of the transition from the present schedule to the proposed schedule the period for which a license is renewed is 6 months or less the licensee may within 30 days of the expiration date of such renewed license file, in lieu of renewal application (FCC Form 303), a written application under oath for the next renewal of license which shall consist of (1) a request that its license be renewed and (2) a statement that no substantial changes have been made in its operations or in its plans for future operations since its last renewal application; or if changes have been made or proposed a statement specifying such changes. Upon review of such statement the Commission may grant a renewal of license for the full period provided for in the rule; or if the Commission requires additional information it may require the filing of renewal application (FCC Form 303).

[10] Formal application required (FCC Form 301).

[11] Formal application required (FCC Form 301).

[12] The word "control," as used herein, is not limited to majority stock ownership but includes actual working control in whatever manner exercised.

[13] The word "person," as used herein, includes all persons under common control.

Class of station	Maximum power authorized to station	Maximum rated carrier power permitted to be installed
		Watts
Class IV	100 or 250 watts	250
Class III	500 or 1,000 watts	1,000
	5,000 watts	5,000
Class II	250, 500, or 1,000 watts	1,000
	5,000 or 10,000 watts	10,000
	25,000 or 50,000 watts	50,000
Class I	10,000 watts	10,000
	25,000 or 50,000 watts	50,000

§ 3.42 *Maximum rated carrier power; how determined.* The maximum rated carrier power of a standard broadcast transmitter shall be determined as the sum of the applicable power ratings of the vacuum tubes employed in the last radio stage.

(a) The power rating of vacuum tubes shall apply to transmitters employing the different classes of operation or systems of modulation as specified in Power Rating of Vacuum Tubes prescribed by the Commission.

(b) If the maximum rated carrier power of any broadcast transmitter, as determined by paragraph (a) of this section, does not give an exact rating as recognized in the Commission's plan of allocation, the nearest rating thereto shall apply to such transmitter.

(c) Authority will not be granted to employ, in the last radio stage of a standard broadcast transmitter, vacuum tubes from a manufacturer or of a type number not listed until the manufacturer's rating for the class of operation or system of modulation is submitted to and approved by the Commission. These data must be supplied by the manufacturer in accordance with Requirements for the Approval of the Power Rating of Vacuum Tubes, prescribed by the Commission.

§ 3.43 *Changes in equipment; authority for.* No licensee or permittee shall change, in the last radio stage, the number of vacuum tubes, nor change to vacuum tubes of different power rating or class of operation, nor shall it change the system of modulation, without authority of the Commission.[14]

§ 3.44 *Other changes in equipment.* Other changes except as provided for in this subpart or Standards of Good Engineering Practice, which do not affect the maximum power rating or operating power of the transmitter or the operation or precision of the frequency control equipment may be made at any time without authority of the Commission, but in the next succeeding application for renewal of license such changes which affect the information already on file shall be shown in full.

§ 3.45 *Radiating system.* (a) All applicants for new, additional, or different broadcast facilities and all licensees requesting authority to change the transmitter site of an existing station shall specify a radiating system the efficiency of which complies with the requirements of good engineering practice for the class and power of the station. (See Minimum Antenna Heights or Field Intensity Requirements and Field Intensity Measurements in Allocation, Sec. A.)

(b) No broadcast station licensee or permittee shall change the physical height of the transmitting antenna, or supporting structures, or make any changes in the radiating system which will measurably alter the radiation patterns, except upon application to and authority from the Commission.

(c) Should any changes occur which would alter the resistance of the antenna system, the licensee shall immediately make a new determination of the antenna resistance (see § 3.54) and shall submit application for authority to determine power by the direct method on the basis of the new measurements.

(d) The antenna and/or supporting structure shall be painted and illuminated in accordance with the specifications supplied by the Commission pursuant to section 303 (q) of the Communications Act of 1934 as amended. (See Part 17 of this chapter; Rules Concerning the Construction Marking, and Lighting of Antenna Structures.)

(e) The simultaneous use of a common antenna or antenna structure by more than one standard broadcast station, or by one or more standard broadcast stations and one or more stations of any other class or service may be authorized provided:

(1) Complete verified engineering data are submitted showing that satisfactory operation of each station will be obtained without adversely affecting the operation of the other station.

(2) The minimum antenna height or field intensity for each standard broadcast station concerned complies with paragraph (a) of this section.

(3) Complete responsibility for maintaining the installation and for painting and illuminating the structure in accordance with the pertinent provisions of Part 17 of this chapter is assumed by one of the licensees.

§ 3.46 *Transmitter.* (a) The transmitter proper and associated transmitting equipment of each broadcast station shall be designed, constructed, and operated in accordance with the standards of good engineering practice in all phases not otherwise specifically included in the regulations in this part.

(b) The transmitter shall be wired and shielded in accordance with good engineering practice and shall be provided with safety features in accordance with the specifications of article 810 of the current National Electrical Code as approved by the American Standards Association.

(c) The station equipment shall be so operated, tuned, and adjusted that emissions are not radiated outside the authorized band which cause or are capable of causing interference to the communications of other stations. Spurious emissions, including radio frequency harmonics, and audio frequency harmonics, shall be maintained at as low a level as practicable at all times in accordance with good engineering practice. In the event interference is caused to other stations by modulating frequencies in excess of 7500 cycles or spurious emissions, including radio frequency harmonics and audio frequency harmonics outside the band plus or minus 7500 cycles of the authorized carrier frequency, the licensee or permittee small install equipment or make adjustments which limit the emissions to within this band or to such an extent above 7500 cycles as to reduce the interference to where it is no longer objectionable.

(d) The audio distortion, audio frequency response, carrier hum, noise level, and other essential phases of the operation which control the external effects shall at all times conform to the requirements of good engineering practice.

§ 3.47 *Equipment performance measurements.* (a) The licensee of each standard broadcast station shall make the following equipment performance measurements at yearly intervals. One such set shall be made during the four-month period preceding the date of filing application for renewal of station license:

(1) Data and curves showing over-all audio frequency response from 30 to 7500 CPS for approximately 25, 50, 85, and 100 (if obtainable) percent modulation. Family of curves should be plotted (one for each percentage above) with DB above and below a reference frequency of 1000 CPS as ordinate and audio frequency as abscissa.

(2) Data and curves showing audio frequency harmonic content for 25, 50, 85, and 100 percent modulation for fundamental frequencies of 50, 100, 400, 1000, 5000, and 7500 CPS (either arithmetical or root sum square values up to the tenth harmonic or 16000 CPS). Plot family of curves (one for each percentage above) with percent distortion as ordinate and audio frequency as abscissa.

(3) Data showing percentage carrier shift for 25, 50, 85, and 100 percent modulation with 400 CPS tone.

(4) Carrier hum and extraneous noise generated within the equipment and measured as the level below 100 percent modulation throughout the audio spectrum or by bands.

(5) Measurements or evidence showing that spurious radiations including radio frequency harmonics are suppressed or are not present to a degree capable of causing objectionable interference to other radio services. Field intensity measurements are preferred but observations made with a communications type receiver may be accepted. However, in particular cases involving interference or controversy, the Commission may require actual measurements. Measurements shall be made with the equipment adjusted for normal program operation and shall include all circuits between main studio amplifier input and antenna output including equalizer or correction circuits normally employed,

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[14] Formal application required (FCC Forms 301 and 302).

but without compression if such amplifier is employed.

(b) The above data together with a description of instruments and procedure signed by the engineer making the measurements, shall be kept on file at the transmitter and shall be made available upon request to any duly authorized representative of the Federal Communications Commission.

TECHNICAL OPERATION

§ 3.51 *Operating power; how determined.* (a) The operating power of each station shall be determined by direct measurement of the antenna power in accordance with § 3.54 except as provided for in paragraph (b) of this section.

(b) Operating power shall be determined on a temporary basis by the indirect method by means of the plate input power to the last radio stage in accordance with §§ 3.52 and 3.53:

(1) In case of an emergency where the licensed antenna system has been damaged by causes beyond the control of the licensee, or

(2) Pending completion of authorized changes in the antenna system.

§ 3.52 *Operating power; indirect measurement.* The operating power determined by indirect measurement from the plate input power of the last radio stage is the product of the plate voltage (E_p), the total plate current of the last radio stage (I_p), and the proper factor (F) given in the following tables: that is

$$\text{Operating power} = E_p \times I_p \times F$$

A. Factor to be used for stations employing plate modulation in the last radio stage[1]

	Factor (F) to be used in determining the operating power from the plate input power
Maximum rated carrier power of transmitter:[2]	
100–1,000 watts	0.70
5,000 and over watts	.80

B. Factor to be used for stations of all powers using low level modulation[1]

	Factor (F) to be used in determining the operating power from the plate input power
Class of power amplifier in the last radio stage:	
Class B	0.35
Class BC[3]	.65

C. Factors to be used for stations of all powers employing grid modulation in the last radio stage[1]

	Factor (F) to be used in determining the operating power from the plate input power
Type of tube in the last radio stage:	
Table C[1]	0.25
Table D[1]	.35

[1] See Power Rating of Vacuum Tubes.

[2] The maximum rated carrier power must be distinguished from thé operating power (See § 3.14 (c) and (d).)

[3] All linear amplifier operation where efficiency approaches that of class C operation.

§ 3.53 *Application of efficiency factors.* In computing operating power by indirect measurement the above factors shall apply in all cases, and no distinction will be recognized due to the operating power being less than the maximum rated carrier power. (See Plate Efficiency of Last Radio Stage.)

§ 3.54 *Operating power: direct measurement.* (a) The antenna input power determined by direct measurement (the square of the antenna current times the antenna resistance at the point where the current is measured and at the operating frequency) shall be the operating power of the station.[15]

(b) If any change is made in the antenna system or any change made which may affect the antenna system, the method of determining operating power shall be changed immediately to the indirect method.

§ 3.55 *Modulation.* The percentage of modulation shall be maintained as high as possible consistent with good quality of transmission and in no case less than 85 percent on peaks nor more than 100 percent on negative peaks of frequent recurrence during any selection which is transmitted at the highest level of the program under consideration.

§ 3.56 *Modulation monitors.* (a) Each station shall have in operation, either at the transmitter or at the place the transmitter is controlled, a modulation monitor of a type approved by the Commission.

(b) In the event that the modulation monitor becomes defective the station may be operated without the monitor pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: *Provided,* That:

(1) Appropriate entries shall be made in the operating log of the station showing the date and time the monitor was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the monitor is found to be defective and immediately after the repaired or replacement monitor has been installed and is functioning properly.

(3) The degree of modulation of the station shall be monitored with a cathode ray oscilloscope or other acceptable means.

(c) If conditions beyond the control of the licensee prevent the restoration of the monitor to service within the above allowed period, informal request may be filed with the Engineer in Charge of the radio district in which the station is operating for such additional time as may be required to complete repairs of the defective instrument.

§ 3.57 *Operating power; maintenance of.* (a) The operating power of each station shall be maintained as near as practicable to the licensed power and shall not exceed the limits of 5 percent above and 10 percent below the licensed power, except that in an emergency when due to causes beyond control of the licensee it becomes impossible to operate with full licensed power, the station may be operated with reduced power for a period not to exceed 10 days, provided the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified immediately after the emergency develops and also upon the resumption of licensed power.

(b) In addition to maintaining the operating power within the above limitations, stations employing directional antenna systems shall maintain the ratio of the antenna currents in the elements of the system within 5 percent of that specified by the terms of the license or other instrument of authorization.

§ 3.58 *Indicating instruments.* (a) Each standard broadcast station shall be equipped with indicating instruments which conform with the specifications set forth in the Standards of Good Engineering Practice Concerning Standard Broadcast Stations (Appendix to this subpart) for measuring the DC plate circuit current and voltage of the last radio frequency amplifier stage; the radio frequency base current of each antenna element; and, for stations employing directional antenna systems, the radio frequency current at the point of common input to the directional antenna. (See "Indicating Instruments Pursuant to § 3.58" in the Standards for Good Engineering Practice Concerning Standard Broadcast Stations).

(b) In the event that any one of these indicating instruments becomes defective when no substitute which conforms with the required specifications is available, the station may be operated without the defective instrument pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: *Provided,* That:

(1) Appropriate entries shall be made in the operating log of the station showing the date and time the meter was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the instrument is found to be defective and immediately after the repaired or replacement instrument has been installed and is functioning properly.

(3) If the defective instrument is the antenna current meter of a nondirectional station which does not employ a remote antenna ammeter, or if the defective instrument is the common point meter of a station which employs a directional antenna, and does not employ a remote common point meter, the operating power shall be determined by the indirect method in accordance with § 3.52 during the entire time the station is operated without the antenna current meter or common point meter. However, if a remote antenna ammeter or a remote common point meter is employed and the antenna current meter or common point meter becomes defective, the remote meter may be used in determining operating power by the direct method pending the return to service of the regular meter, provided other meters maintained at same value previously employed.

(c) If conditions beyond the control of the licensee prevent the restoration of the meter to service within the above allowed period, informal request in accordance with § 1.332 (d) of this chapter may be filed with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

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[15] See Further Requirements for Direct Measurements of Power.

(d) Remote antenna ammeters and remote common point meters are not required therefore authority to operate without them is not necessary. However if a remote antenna ammeter or common point meter is employed and becomes defective, the antenna base currents may be read and logged once daily for each mode of operation, pending the return to service of the regular remote meter.

§ 3.59 *Frequency tolerance.* The operating frequency of each station shall be maintained within 20 cycles of the assigned frequency.

§ 3.60 *Frequency monitor.* (a) The licensee of each station shall have in operation, either at the transmitter or at the place where the transmitter is controlled, a frequency monitor of a type approved by the Commission which shall be independent of the frequency control of the transmitter.

(b) In the event that the frequency monitor becomes defective the station may be operated without the monitor pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: *Provided*, That:

(1) Appropriate entries shall be made in the operating log of the station showing the date and time the monitor was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the monitor is found to be defective and immediately after the repaired or replacement monitor has been installed and is functioning properly.

(3) The frequency of the station shall be measured by an external source at least once each seven days and the results entered in the station log.

(c) If conditions beyond the control of the licensee prevent the restoration of the monitor to service within the above allowed period, informal request in accordance with § 1.332 (d) of this chapter may be filed with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

§ 3.61 *New equipment; restrictions.* The Commission will authorize the installation of new transmitting equipment in a broadcast station or changes in the frequency control of an existing transmitter only if such equipment is so designed that there is reasonable assurance that the transmitter is capable of maintaining automatically the assigned frequency within the limits specified in § 3.59.

§ 3.62 *Automatic frequency control equipment; authorization required.* New automatic frequency control equipment and changes in existing automatic frequency control equipment that may affect the precision of frequency control or the operation of the transmitter shall be installed only upon authorization[16] from the Commission. (See Approved Equipment.)

§ 3.63 *Auxiliary transmitter.* Upon showing that a need exists for the use of an auxiliary transmitter[17] in addition to the regular transmitter of a broadcast station, a license therefor may be issued: *Provided*, That:

(a) An auxiliary transmitter may be installed either at the same location as the main transmitter or at another location.

(b) A licensed operator shall be in control whenever an auxiliary transmitter is placed in operation.

(c) The auxiliary transmitter shall be maintained so that it may be put into immediate operation at any time for the following purposes:

(1) The transmission of the regular programs upon the failure of the main transmitter.

(2) The transmission of regular programs during maintenance or modification work on the main transmitter necessitating discontinuance of its operation for a period not to exceed five days.[18]

(3) Upon request by a duly authorized representative of the Commission.

(d) The auxiliary transmitter shall be tested at least once each week to determine that it is in proper operating condition and that it is adjusted to the proper frequency, except that in case of operation in accordance with paragraph (c) of this section during any week, the test in that week may be omitted provided the operation under paragraph (c) is satisfactory. A record shall be kept of the time and result of each test operating under paragraph (c) of this section. Tests shall be conducted only between midnight and 9 a. m., local standard time.

(e) The auxiliary transmitter shall be equipped with satisfactory control equipment which will enable the maintenance of the frequency emitted by the station within the limits prescribed by the regulations in this part.

(f) An auxiliary transmitter which is licensed at a geographical location different from that of the main transmitter shall be equipped with a frequency control which will automatically hold the frequency within the limits prescribed by the regulations in this part without any manual adjustment during operation or when it is being put into operation.

(g) The operating power of an auxiliary transmitter may be less than the authorized power, but in no event shall it be greater than such power.

§ 3.64 *Alternate main transmitters.* The licensee of a standard broadcast station may be licensed for alternate main transmitters provided that a technical need[19] for such alternate transmitters is shown and that the following conditions are met:

(a) Both transmitters are located at the same place.

(b) The transmitters have the same power rating except at stations operating with different daytime and nighttime power when it shall be permissible to employ transmitters of power ratings appropriate to either the licensed daytime or nighttime power.

(c) The external effects from both transmitters are substantially the same as to frequency stability, reliability of operation, radio harmonics and other spurious emissions, audio frequency range and audio harmonic generation in the transmitter.

§ 3.65 *Antenna structure, marking and lighting.* Where an antenna structure(s) is required to be painted or lighted see § 17.37, *Inspection of tower lights and associated control equipment;* § 17.39, *Cleaning and repainting;* § 17.40, *Time when lights shall be exhibited;* § 17.41, *Spare lamps;* and § 17.42, *Lighting equipment;* of Part 17 of this chapter (Construction, Marking and Lighting of Antenna Structures).

§ 3.66 *Remote control operation.* A station which is authorized for nondirectional operation with power of 10 kilowatts or less may, upon prior authorization from the Commission, be operated by remote control at the point(s) which shall be specified in the station license. An application for authorization to operate by remote control may be made as a part of an application for construction permit or license, or modification thereof by specifying the proposed remote control point(s). Operation by remote control shall be subject to the following conditions:

(a) The equipment at the operating and transmitting positions shall be so installed and protected that it is not accessible to or capable of operation by persons other than those duly authorized by the licensee.

(b) The control circuits from the operating position to the transmitter shall provide positive on and off control and shall be such that open circuits, short circuits, grounds or other line faults will not actuate the transmitter and any fault causing loss of such control will automatically place the transmitter in an inoperative condition.

(c) Control and monitoring equipment shall be installed so as to allow the licensed operator either at the remote control point or at the transmitter, to perform all of the functions in a manner required by the Commission's rules and Standards.

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[16] Formal application required (FCC Forms 301 and 302).

[17] All regulations as to safety requirements and spurious emissions applying to broadcast transmitting equipment shall apply also to an auxiliary transmitter. (See Use of Frequency and Modulation Monitors at Auxiliary Transmitter.)

[18] Where such operation is required for periods in excess of five days an informal application shall be made.

[19] Such as licensees maintaining 24-hou schedule and needing alternate operations for maintenance, or where developmental work requires alternate operation.

OPERATION

§ 3.71 *Minimum operating schedule.* Except Sundays, the licensee of each standard broadcast station shall maintain a minimum operating schedule of two-thirds of the total hours that it is authorized to operate between 6 a. m. and 6 p. m., local standard time, and two-thirds of the total hours it is authorized to operate between 6 p. m. and midnight, local standard time, except that in an emergency when, due to causes beyond the control of the licensee, it becomes impossible to continue operating, the station may cease operation for a period of not to exceed 10 days, provided that the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified in writing immediately after the emergency develops.

§ 3.72 *Operation during experimental period.* The licensee of each standard broadcast station shall operate or refrain from operating its station during the experimental period as directed by the Commission in order to facilitate frequency measurement or for the determination of interference. (Stations involved in the after-midnight frequency monitoring programs are notified of their operating and silent schedule.)

§ 3.73 *Specified hours.* If the license of a station specifies the hours of operation, the schedule so specified shall be adhered to except as provided in §§ 3.71 and 3.72.

§ 3.74 *Sharing time.* If the licenses of stations authorized to share time do not specify hours of operation, the licensees shall endeavor to reach an agreement for a definite schedule of periods of time to be used by each. Such agreement shall be in writing and each licensee shall file the same in triplicate original with each application to the Commission for renewal of license. If and when such written agreements are properly filed in conformity with this section the file mark of the Commission will be affixed thereto, one copy will be retained by the Commission, one copy forwarded to the Engineer in Charge of the radio district in which the station is located, and one copy returned to the licensee to be posted with the station license and considered as a part thereof. If the license specifies a proportionate time division, the agreement shall maintain this proportion. If no proportionate time division is specified in the license, the licensees shall agree upon a division of time. Such division of time shall not include simultaneous operation of the stations unless specifically authorized by the terms of the license.

§ 3.75 *Sharing time; equivalence of day and night hours.* For the purpose of determining the proportionate division of time of the broadcast day for sharing time stations 1 night hour shall be considered the equivalent of 2 day hours.

§ 3.76 *Sharing time; experimental period.* If the license of a station authorized to share time does not specify the hours of operation, the station may be operated for the transmission of regular programs during the experimental period provided an agreement thereto is reached with the other stations with which the broadcast day is shared and further provided such operation is not in conflict with § 3.72. Time-sharing agreements for operation during the experimental period need not be submitted to the Commission.

§ 3.77 *Sharing time; departure from regular schedule.* A departure from the regular operating schedule set forth in a time-sharing agreement will be permitted only in cases where an agreement to that effect is reduced to writing, is signed by the licensees of the stations affected thereby and filed in triplicate by each licensee with the Commission prior to the time of the proposed change. If time is of the essence, the actual departure in operating schedule may precede the actual filing of written agreement, provided appropriate notice is sent to the Commission and the Engineer in Charge of the radio district in which the station is located.

§ 3.78 *Sharing time stations; notification to Commission.* If the licensees of stations authorized to share time are unable to agree on a division of time, the Commission shall be so notified by statement to that effect filed with the applications for renewals of licenses. Upon receipt of such statement the Commission will designate the applications for a hearing and, pending such hearing, the operating schedule previously adhered to shall remain in full force and effect.

§ 3.79 *License to specify sunrise and sunset hours.* If the licensee of a broadcast station is required to commence or cease operation, or to change the mode of operation of the station at the times of sunrise and sunset at any particular location, the controlling times for each month of the year are set forth in the station's instrument of authorization. Uniform sunrise and sunset times are specified for all of the days of each month, based upon the actual times of sunrise and sunset for the fifteenth day of that month adjusted to the nearest quarter hour. In accordance with a standardized procedure described therein, actual sunrise and sunrise and sunset times are derived by interpolation in the tables of the 1946 American Nautical Almanac, issued by the Nautical Almanac Office of the United States Naval Observatory

§ 3.80 *Secondary station; filing of operating schedule.* The licensee of a secondary station authorized to operate limited time and which may resume operation at the time the dominant station (or stations) on the same channel ceases operation shall, with each application for renewal of license, file in triplicate a copy of its regular operating schedule, bearing a signed notation by the licensee of the dominant station of its objection or lack of objection thereto. Upon approval of such operating schedule, the Commission will affix its file mark and return one copy to the licensee authorized to operate limited time, which shall be posted with the station license and considered as a part thereof. Departure from said operating schedule will be permitted only in accordance with the procedure set forth in § 3.77.

§ 3.81 *Secondary station; failure to reach agreement.* If the licensee of a secondary station authorized to operate limited time and a dominant station on a channel are unable to agree upon a definite time for resumption of operation by the station authorized limited time, the Commission shall be so notified by the licensee of the station authorized limited time. After receipt of such statement the Commission will designate for hearing the applications of both stations for renewal of license, and pending the hearing the schedule previously adhered to shall remain in full force and effect.

§ 3.82 *Departure from schedule; material violation.* In all cases where a station licensee is required to prepare and file an operating schedule, any deviation or departure from such schedule, except as herein authorized, shall be considered as a violation of a material term of the license.

§ 3.83 *Local standard time.* All references herein to standard time or local standard time refer to local standard time as determined and fixed by the Interstate Commerce Commission.

§ 3.84 *Daylight saving time.* If local time is changed from standard time to daylight saving time at the location of all stations sharing time on the same channel, the hours of operation of all such stations on that channel shall be understood to refer to daylight saving time, and not standard time, as long as daylight saving time is observed at such locations. This provision shall govern when the time is changed by provision of law or general observance of daylight saving time by the various communities, and when the time of operation of such stations is specified in the license or is mutually agreed upon by the licensees: *Provided, however,* That when the license specifies average time of sunrise and sunset, local standard time shall be observed. In no event shall a station licensed for daytime only operate on regular schedule prior to local sunrise, or shall a station licensed for greater daytime power than nighttime power or for a different radiation pattern for daytime operation than for nighttime operation operate with the daytime power or radiation pattern prior to local sunrise.

§ 3.85 *Changes in time; agreement between licensees.* Where the local time is not changed from standard time to daylight saving time at the location of all stations sharing time on the same channel, the hours of operation of such stations shall be understood to have reference to standard time, and not daylight saving time, unless said licensees mutually agree upon a new schedule which shall be effective only while daylight saving time is observed at the location of some of these stations.

§ 3.86 *Local standard time; license provisions.* The time of operation of any broadcast station which does not share time with other stations on the same channel shall be understood to have reference to local standard time unless modification of such license with respect to hours of operation is authorized by the Commission.

§ 3.87 *Program transmissions prior to local sunrise.* (a) The provisions of §§ 3.6, 3.8, 3.9, 3.10, 3.23, 3.79, and 3.84 shall not prevent the transmission of programs between 4 o'clock a. m., local standard time, and local sunrise, of standard broadcast stations with their authorized daytime facilities: *Provided*, That the provisions of this section shall not extend to:

(1) Stations regularly sharing time during daytime hours either under licenses pursuant to which time-sharing agreements have been entered into or licenses specifying hours of operation, unless time-sharing agreements have been reached covering such operation prior to local sunrise. Sections 3.74, 3.77, and 3.78 shall be applicable to such agreements.

(2) Any Class II station causing interference[20] by use of its daytime facilities within the 0.5 mv/m 50 percent skywave contour of any Class I station either of the United States or of any country party to the North American Regional Broadcasting Agreement, except (i) where the Class I station is located east of the Class II station in which case operation may begin at local sunrise at the Class I station; (ii) where an agreement has been reached with the Class I station to begin operation prior to local sunrise.

(3) Operation by use of its daytime facilities of any Class II station on any Class I-A channel not assigned to the United States under the North American Regional Broadcasting Agreement.

(b) Any station operating during such hours receiving notice from the Commission that undue interference is caused shall refrain from such operation during such hours pending further notice from the Commission.

(c) Nothing contained in outstanding instruments of authorization for such stations shall prohibit such operation except as herein provided.

(d) The period 4 a. m. to 6 a. m., local standard time, shall not be included in determining compliance with § 3.71.

RULES APPLICABLE TO STATIONS ENGAGED IN CHAIN BROADCASTING

§ 3.101 *Exclusive affiliation of station.* No license shall be granted to a standard broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization[21] under which the station is prevented or hindered from, or penalized for, broadcasting the programs of any other network organization.

§ 3.102 *Territorial exclusivity.* No license shall be granted to a standard broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which prevents or hinders another station serving substantially the same area from broadcasting the network's programs not taken by the former station, or which prevents or hinders another station serving a substantially different area from broadcasting any program of the network organization. This section shall not be construed to prohibit any contract, arrangement, or understanding between a station and a network organization pursuant to which the station is granted the first call in its primary service area upon the programs of the network organization.

§ 3.103 *Term of affiliation.* No license shall be granted to a standard broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which provides, by original term, provisions for renewal, or otherwise for the affiliation of the station with the network organization for a period longer than 2 years: *Provided*, That a contract, arrangement, or understanding for a period up to 2 years, may be entered into within six months prior to the commencement of such period.

§ 3.104 *Option time.* No license shall be granted to a standard broadcast station which options[22] for network programs any time subject to call on less than 56 days' notice, or more time than a total of 3 hours[23] within each of four segments of the broadcast day, as herein described. The broadcast day is divided into four segments, as follows: 8 a. m. to 1 p. m.; 1 p. m. to 6 p. m.; 6 p. m. to 11 p. m.; 11 p. m. to 8 a. m.[24] Such options may not be exclusive as against other network organizations and may not prevent or hinder the station from optioning or selling any or all of the time covered by the option, or other time, to other network organizations.

§ 3.105 *Right to reject programs.* No license shall be granted to a standard broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which (a) with respect to programs offered pursuant to an affiliation contract, prevents or hinders the station from rejecting or refusing network programs which the station reasonably believes to be unsatisfactory or unsuitable; or which (b) with respect to network programs so offered or already contracted for, prevents the station from rejecting or refusing any program which, in its opinion, is contrary to the public interest, or from substituting a program of outstanding local or national importance.

§ 3.106 *Network ownership of stations.*[25] No license shall be granted to a network organization, or to any person directly or indirectly controlled by or under common control[26] with a network organization, for more than one standard broadcast station where one of the stations covers substantially the service area of the other station, or for any standard broadcast station in any locality where the existing standard broadcast stations are so few or of such unequal desirability (in terms of coverage, power, frequency, or other related matters) that competition would be substantially restrained by such licensing.

§ 3.107 *Dual network operation.* No license shall be issued to a standard broadcast station affiliated with a network organization which maintains more than one network: *Provided*, That this section shall not be applicable if such networks are not operated simultaneously, or if there is no substantial overlap in the territory served by the group of stations comprising each such network.

§ 3.108 *Control by networks of station rates.* No license shall be granted to a standard broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization under which the station is prevented or hindered from, or penalized for, fixing or altering its rates for the sale of broadcast time for other than the network's programs.

§ 3.109 *Special rules relating to contracts providing for reservation of time upon sale of a station.* (a) No license, renewal of license, assignment of license, or transfer of control of a corporate licensee shall be granted or authorized to a standard broadcast station which has a contract, arrangement or understanding, express or implied, pursuant to which, as consideration or partial consideration for the assignment of license or transfer of control, the assignor of a station license or the transferor of stock, where transfer of a corporate licensee is involved, or the nominee of such assignor or transferor retains any right of reversion of the license or any right to the reassignment of the license in the future, or reserves the right to use the facilities of the station for any period whatsoever.

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[20] As determined by the Standards of Good Engineering Practice Concerning Standard Broadcast Stations and the North American Regional Broadcasting Agreement.

[21] The term "network organization" as used herein includes national and regional network organizations. See ch. VII, J, of Report on Chain Broadcasting.

[22] As used in this section, an option is any contract, arrangement, or understanding, express or implied, between a station and a network organization which prevents or hinders the station from scheduling programs before the network agrees to utilize the time during which such programs are scheduled, or which requires the station to clear time already scheduled when the network organization seeks to utilize the time.

[23] All time options permitted under this section must be for specified clock hours, expressed in terms of any time system set forth in the contract agreed upon by the station and network organization. Shifts from daylight saving to standard time or vice versa may or may not shift the specified hours correspondingly as agreed by the station and network organization.

[24] These segments are to be determined for each station in terms of local time at the location of the station but may remain constant throughout the year regardless of shifts from standard to daylight saving time or vice versa.

[25] Effective date of this section with respect to any station may be extended from time to time in order to permit the orderly disposition of properties; and it shall be suspended indefinitely with respect to regional network organizations.

[26] The word "control" as used herein is not limited to full control but includes such a measure of control as would substantially affect the availability of the station to other networks.

(b) In the case of assignment of license or transfer of control of a corporate licensee approved by the Commission before the effective date of this section, February 15, 1949, involving a contract, arrangement or understanding of the type covered by paragraph (a) of this section and the existence and terms of which were fully disclosed to the Commission at the time of execution, the Commission will give consideration to the issuance of a license despite the existence of such contract, arrangement or understanding, if the parties thereto modify such contract within 6 months from the effective date of this section.[27] Such modifications will be considered on the facts of each case but no such modification will be approved unless the modified contract contains at least the following provisions:

(1) A maximum limitation of the time subject to reservation so that no more than 12 hours per week shall be subject to reservation, of which no more than 4 hours shall be on any given day.

(2) A clause providing that the licensee reserves the right to reject or refuse programs which he reasonably believes to be unsatisfactory or unsuitable or for which, in his opinion, a program of outstanding local or national importance should be substituted, but provision may be made for the substitution of other radio time for programs so rejected or for the payment at the station card rate for the time made unavailable.

(3) A prohibition against the resale or reassignment of any of the broadcast time reserved by such modified contract.

(4) An express negation of any right with respect to reversion or reassignment of license.

(5) An express provision setting forth a definite expiration date of the contract, arrangement or understanding. Such expiration date shall not extend beyond February 15, 1964 and shall in no event extend beyond the expiration date originally provided for in any such contract, agreement or understanding, in the event that such expiration date is a date prior to February 15, 1964.

(6) An express provision giving to the licensee the right to terminate the contract, arrangement or understanding for substantial cause, including, but not limited to, the assignment of license or the transfer of control of a corporate licensee, consistent disagreement over programs between the parties, or the acquisition of a network affiliation by the licensee, upon the payment of a lump sum or periodic payments, and providing that the amount initially fixed shall thereafter decrease as the amount of time reserved is decreased by performance of the contract. Any such payment should not be so unduly large as to constitute in practice an effective deterrent to the licensee exercising the right of termination. In determining whether the amount is unduly large, the Commission will consider the amount by which consideration in return for the transfer of the station was decreased by reason of the reservation of time or the present value of the radio time still reserved and unused as of the date of the exercise of the right of termination.

GENERAL RULES APPLICABLE TO STANDARD BROADCAST STATIONS

§ 3.163 *Discontinuance of operation.* The licensee of each station shall notify the Commission in Washington, D. C., and the Engineer in Charge of the radio district where such station is located of permanent discontinuance of operation at least two days before operation is discontinued. The licensee, shall, in addition, immediately forward the station license and other instruments of authorization to the Washington, D. C., office of the Commission for cancellation.

§ 3.164 *Station and operator licenses; posting of.* The station license and any other instrument of station authorization and the original license (or FCC Form 759) of each station operator shall be posted in a conspicuous place in the transmitter control room in such manner that all terms thereof are visible.

§ 3.165 *Operator requirements.* (a) One or more radio operators holding a valid radiotelephone first-class operator license, except as provided below, shall be in actual charge of the transmitting apparatus and shall be on duty either at the transmitter location or remote control point.

(b) A station which is authorized for non-directional operation with power of 10 kilowatts or less may be operated by persons holding commercial radio operator license of any class, except an aircraft radiotelephone operator authorization or a temporary limited radiotelegraph second-class operator license, when the equipment is so designed that the stability of the frequency is maintained by the transmitter itself within the limits of tolerance specified, and none of the operations, except those specified in subparagraphs (1) and (~~2~~)4 of this paragraph, necessary to be performed during the course of normal operation may cause off-frequency operation or result in any unauthorized radiation.[28] Adjustments of transmitting equipment by such operators, except when under the immediate supervision of a radiotelephone first-class operator, shall be limited to the following:

(1) Those necessary to commence or terminate transmitter emissions as a routine matter.

(2) Those external adjustments that may be required as a result of variations of primary power supply.

(3) Those external adjustments which may be necessary to insure modulation within the limits required.

(4) Those adjustments necessary to effect any change in operating power which may be required by the station's instrument of authorization.

Should the transmitting apparatus be observed to be operating in a manner inconsistent with the station's instrument of authorization and none of the above adjustments are effective in bringing it into proper operation, a person holding other than a radiotelephone first-class operator license and not acting under the immediate supervision of radiotelephone first-class operator, shall be required to terminate the station's omissions.

(c) The licensee of a station which is operated by one or more operators holding other than a radiotelephone first-class operator license shall have one or more operators holding a radiotelephone first-class operator license in regular full-time employment at the station whose primary duties shall be to effect and insure the proper functioning of the transmitting equipment. In the event that the licensee also operates an FM broadcast station in the same community, a regular full-time radiotelephone first-class operator or operators employed in connection with the standard broadcast station may concurrently be employed to satisfy the requirements of § 3.265 (c) or § 3.565 (c): *Provided,* That the duties of such operator or operators concerning the FM broadcast transmitting equipment shall in nowise interfere with the proper performance of his duties with respect to the standard broadcast transmitter.

(d) The licensed operator on duty and in charge of a standard broadcast transmitter may, at the discretion of the licensee, be employed for other duties or for the operation of another radio station or stations in accordance with the class of operator's license which he holds and the rules and regulations governing such other stations: *Provided, however,* That such duties shall in nowise interfere with the proper operation of the standard broadcast transmitter.

§ 3.166 *Period of construction.* Each construction permit for a radio station in the standard broadcast service will specify a maximum of 60 days from the date of granting thereof as the time within which construction of the station shall begin, and a maximum of six months thereafter as the time within which construction shall be completed and with the station ready for operation, unless otherwise determined by the Commission upon proper showing in any particular case.

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[27] The effective date of this section with respect to any station may be extended, upon request, until November 15, 1949, *Provided,* That any such station shall file with the Commission, in triplicate, on or before September 15, 1949, a complete statement under oath of the status of its negotiations to modify any contract, arrangement or understanding to insure compliance with the provisions of this section, the extent to which it has been unable to achieve such modification at the time of the report, the reason for such failure to secure the requisite modification, a statement of what further action such licensee intends to take to insure compliance with the provisions of the section, and proof of service of copies of such statement upon all other parties to such contracts, arrangements, or understandings.

[28] A person holding any class of radio operator license or permit who is authorized thereunder to perform limited operation of a standard broadcast station may, when a Conelrad Radio Alert is called, make adjustments necessary to effect operation on a Conelrad authorization: *Provided,* That the station's full-time radiotelephone first-class operator shall have previously instructed such person in the adjustments to the transmitter which are necessary to accomplish Conelrad operation.

§ 3.167 *Equipment tests.* (a) During the process of construction of a standard broadcast station the permittee, after notifying the Commission and Engineer in Charge of the radio district in which the station is located, may without further authority of the Commission, conduct equipment tests during the experimental period for the purpose of such adjustments and measurements as may be necessary to assure compliance with the terms of the construction permit, the technical provisions of the application therefor the rules and regulations, and the applicable engineering standards. In addition, the Commission may authorize equipment tests other than during the experimental period if such operation is shown to be desirable to the proper completion of construction and adjustment of the transmitting equipment and antenna system. An informal application for such authority, giving full details regarding the need for such tests, shall be filed with the Commission at least two (2) days (not including Sundays and Saturdays and legal holidays when the offices of the Commission are not open) prior to the date on which it is desired to begin such operation.

(b) The Commission may notify the permittee to conduct no tests or may cancel suspend, or change the date for the beginning of equipment tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Equipment tests may be continued so long as the construction permit shall remain valid and shall be conducted only during the experimental period (12 midnight to local sunrise) unless otherwise specifically authorized.

(d) Inspection of a station will ordinarily be required during the equipment test period and before the commencement of program tests. After construction and after adjustments and measurements have been completed to show compliance with the terms of the construction permit, the technical provisions of the application therefor, the rules and regulations and the applicable engineering standards. the permittee should notify the Engineer in Charge of the radio district in which the station is located that it is ready for inspection.

(e) The authorization for tests embodied in this section shall not be construed as constituting a license to operate but as a necessary part of construction.

§ 3.168 *Program tests.* (a) Upon completion of construction of a standard broadcast station in accordance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations and applicable engineering standards and when an application for station license has been filed showing the station to be in satisfactory operating condition,[29] the permittee may request authority to conduct program tests: *Provided,* That such request shall be filed with the Commission at least ten (10) days prior to the date on which it is desired to begin such operation and that the Engineer in Charge of the radio district in which the station is located is notified.

(b) Program tests shall not commence until specific Commission authority is received. The Commission reserves the right to change the date of the beginning of such tests or to suspend or revoke the authority for program tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Unless sooner suspended or revoked program test authority continues valid during Commission consideration of the application for license and during this period further extension of the construction permit is not required. Program test authority shall be automatically terminated by final determination upon the application for station license.

(d) All operation on program test authority shall be in strict compliance with the rules governing standard broadcast stations and in strict accordance with representations made in the application for license pursuant to which the tests were authorized

(e) The granting of program test authority shall not be construed as approval by the Commission of the application for station license.

§ 3.169 *Station inspection.* The licensee of any radio station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 3.181 *Logs.* The licensee or permittee of each standard broadcast station shall maintain program and operating logs and shall require entries to be made as follows:

(a) In the program log:

(1) An entry of the time each station identification announcement (call letters and location) is made.

(2) An entry briefly describing each program broadcast, such as "music," "drama," "speech," etc., together with the name or title thereof, and the sponsor's name, with the time of the beginning and ending of the complete program. If a mechanical record is used, the entry shall show the exact nature thereof, such as "record," "transcription," etc., and the time it is announced as a mechanical record. If a speech is made by a political candidate, the name and political affiliations of such speaker shall be entered.

(3) An entry showing that each sponsored program broadcast has been announced as sponsored, paid for, or furnished by the sponsor.

(4) An entry showing, for each program of network origin, the name of the network originating the program.

(b) In the operating log:

(1) An entry of the time the station begins to supply power to the antenna, and the time it stops.

(2) An entry of the time the program begins and ends.

(3) An entry of each interruption to the carrier wave, its cause, and duration.

(4) An entry of the following each 30 minutes:

(i) Operating constants of last radio stage (total plate current and plate voltage).

(ii) Antenna current.

(iii) Frequency monitor reading.

(iv) Temperature of crystal control chamber if thermometer is used.

(5) Log of experimental operation during experimental period. (If regular operation is maintained during this period, the above logs shall be kept.)

(i) A log must be kept of all operation during the experimental period. If the entries required above are not applicable thereto, then the entries shall be made so as to fully describe the operation.

(c) Where an antenna structure(s) is required to be illuminated see § 17.38, *Recording of tower light inspections in the station record,* of Part 17 of this chapter (Construction, Marking and Lighting of Antenna Structures).

§ 3.182 *Logs, retention of.*[30] Logs of standard broadcast stations shall be retained by the licensee or permittee for a period of two years: *Provided, however,* That logs involving communications incident to a disaster or which include communications incident to or involved in an investigation by the Commission and concerning which the licensee or permittee has been notified, shall be retained by the licensee or permittee until he is specifically authorized in writing by the Commission to destroy them: *Provided, further,* That logs incident to or involved in any claim or complaint of which the licensee or permittee has notice shall be retained by the licensee or permittee until such claim or complaint has been fully satisfied or until the same has been barred by statute limiting the time for the filing of suits upon such claims.

§ 3.183 *Logs; by whom kept.* Each log shall be kept by the person or persons competent to do so, having actual knowledge of the facts required, who shall sign the log when starting duty and again when going off duty. The logs shall be made available upon request by an authorized representative of the Commission.

§ 3.184 *Log form.* The log shall be kept in an orderly manner, in suitable form, and in such detail that the data required for the particular class of station concerned are readily available. Key letters or abbreviations may be used if proper meaning or explanation is contained elsewhere in the log.

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[29] All data necessary to show compliance with the terms and conditions of the construction permit must be filed with the license application. If the station is using a directional antenna, a proof of performance must also be filed as required by § 3.33 (b).

[30] Attention is called to the fact, however, that application forms for licenses and other authorizations require that certain operating program data be supplied. It is suggested that these application forms be kept in mind in connection with maintenance of station program and operating records.

§ 3.185 *Correction of logs.* No log or portion thereof shall be erased, obliterated, or willfully destroyed within the period of retention provided by the rules. Any necessary correction may be made only by the person originating the entry who shall strike out the erroneous portion, initial the correction made, and indicate the date of correction.

§ 3.186 *Rough logs.* Rough logs may be transcribed into condensed form, but in such case the original log or memoranda and all portions thereof shall be preserved and made a part of the complete log.

§ 3.187 *Station identification.* (a) A licensee of a standard broadcast station shall make station identification announcement (call letters and location) at the beginning and ending of each time of operation and during operation (1) on the hour and (2) either on the half hour or at the quarter hour following the hour and at the quarter hour preceding the next hour: *Provided,*

(b) Such identification announcement need not be made on the hour when to make such announcement would interrupt a single consecutive speech, play, religious service, symphony concert, or operatic production of longer duration than 30 minutes. In such cases the identification announcement shall be made at the beginning of the program, at the first interruption of the entertainment continuity, and at the conclusion of the program.

(c) Such identification announcement need not be made on the half hour or quarter hours when to make such announcement would interrupt a single consecutive speech, play, religious service, symphony concert, or operatic production. In such cases an identification announcement shall be made at the first interruption of the entertainment continuity and at the conclusion of the program: *Provided,* That an announcement within 5 minutes of the times specified in paragraph (a) (2) of this section will satisfy the requirements of identification announcements.

(d) In the case of variety show programs, baseball game broadcasts, or similar programs of longer duration than 30 minutes, the identification announcement shall be made within 5 minutes of the hour and of the times specified in paragraph (a) (2) of this section.

(e) In the case of all other programs the identification announcement shall be made within 2 minutes of the hour and of the times specified in paragraph (a) (2) of this section.

(f) In making the identification announcement the call letters shall be given only on the channel of the station identified thereby, except as otherwise provided in § 3.287 of the Commission's rules governing FM broadcast stations.

§ 3.188 *Mechanical records.*[31] Each program broadcast which consists in whole or in part of one or more mechanical reproductions shall be announced in the manner and to the extent set out below.

(a) Each such program of longer duration than 30 minutes, consisting in whole or in part of one or more mechanical reproductions, shall be identified by appropriate announcement at the beginning of the program, at each 30-minute interval and at the conclusion of the program: *Provided, however,* That the identifying announcement at each 30-minute interval is not required in case of a mechanical reproduction consisting of a continuous uninterrupted speech, play, religious service, symphony concert, or operatic production of longer than 30 minutes.

(b) Each such program of a longer duration than 5 minutes and not in excess of 30 minutes, consisting in whole or in part of one or more mechanical reproductions, shall be identified by an appropriate announcement at the beginning and end of the program.

(c) Each such program of 5 minutes or less, consisting in whole or in part of mechanical reproductions, shall be identified by appropriate announcement immediately preceding the use thereof: *Provided, however,* That each such program of one minute or less need not be announced as such.

(d) In case a mechanical reproduction is used for background music, sound effects, station identification, program identification (theme music of short duration) or identification of the sponsorship of the program proper, no announcement of the mechanical reproduction is required.

(e) The exact form of identifying announcement is not prescribed, but the language shall be clear and in terms commonly used and understood. A licensee shall not attempt affirmatively to create the impression that any program being broadcast by mechanical reproduction consists of live talent.

§ 3.189 *Sponsored programs; announcement of.* (a) In the case of each program for the broadcasting of which money, services, or other valuable consideration is either directly or indirectly paid or promised to, or charged or received by, any radio broadcast station, the station broadcasting such program shall make, or cause to be made, an appropriate announcement that the program is sponsored, paid for, or furnished, either in whole or in part.

(b) In the case of any political program or any program involving the discussion of public controversial issues for which any records, transcriptions, talent, scripts, or other material or services of any kind are furnished, either directly or indirectly, to a station as an inducement to the broadcasting of such program, an announcement shall be made both at the beginning and conclusion of such program on which such material or services are used that such records, transcriptions, talent, scripts, or other material or services have been furnished to such station in connection with the broadcasting of such program: *Provided, however,* That only one such announcement need be made in the case of any such program of 5 minutes' duration or less, which announcement may be made either at the beginning or the conclusion of the program.

(c) The announcement required by this section shall fully and fairly disclose the true identity of the person or persons by whom or in whose behalf such payment is made or promised, or from whom or in whose behalf such services or other valuable consideration is received, or by whom the material or services referred to in paragraph (b) of this section are furnished. Where an agent or other person contracts or otherwise makes arrangements with a station on behalf of another, and such fact is known to the station, the announcement shall disclose the identity of the person or persons in whose behalf such agent is acting instead of the name of such agent.

(d) In the case of any program, other than a program advertising commercial products or services, which is sponsored, paid for or furnished, either in whole or in part, or for which material or services referred to in paragraph (b) of this section are furnished, by a corporation, committee, association or other unincorporated group, the announcement required by this section shall disclose the name of such corporation, committee, association or other unincorporated group. In each such case the station shall require that a list of the chief executive officers or members of the executive committee or of the board of directors of the corporation, committee, association or other unincorporated group shall be made available for public inspection at one of the radio stations carrying the program.

(e) In the case of programs advertising commercial products or services, an announcement stating the sponsor's corporate or trade name or the name of the sponsor's product, shall be deemed sufficient for the purposes of this section and only one such announcement need be made at any time during the course of the program.

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[31] During the annual periods in which daylight saving time will be effective the requirements of this section are waived with respect to network programs, transcribed and rebroadcast one hour later because of the time differential resulting from the adoption of daylight saving time in some areas, this waiver being applicable whether the off-the-line recording is made by the network itself at one of its key stations or by an individual station, but only when the off-the-line recording is for broadcast one hour later by those stations which operate on standard time. Furthermore, each station which broadcasts network programs one hour later in accordance with this waiver shall make an appropriate announcement at least once each day between the hours of 10 a. m. and 10 p. m., stating that some or all of the network programs which are broadcast by that station are delayed broadcasts by means of transcription, and indicating whether the transcriptions have been made by the network or the individual station. A network organization or individual station taking advantage of this waiver should so advise the Commission.

§ 3.190 *Broadcasts by candidates for public office*—(a) *Definitions.* A "legally qualified candidate" means any person who has publicly announced that he is a candidate for nomination by a convention of a political party or for nomination or election in a primary, special, or general election, municipal, county, State or national, and who meets the qualifications prescribed by the applicable laws to hold the office for which he is a candidate, so that he may be voted for by the electorate directly or by means of delegates or electors, and who:

(1) Has qualified for a place on the ballot or

(2) Is eligible under the applicable law to be voted for by sticker, by writing in his name on the ballot, or other method, and (i) has been duly nominated by a political party which is commonly known and regarded as such, or (ii) makes a substantial showing that he is a bona fide candidate for nomination or office, as the case may be.

(b) *General requirements.* No station licensee is required to permit the use of its facilities by any legally qualified candidate for public office, but if any licensee shall permit any such candidate to use its facilities, it shall afford equal opportunities to all other such candidates for that office to use such facilities: *Provided,* That such licensee shall have no power of censorship over the material broadcast by any such candidate.

(c) *Rates and practices.* The rates, if any, charged all such candidates for the same office shall be uniform and shall not be rebated by any means, directly, or indirectly; no licensee shall make any discrimination in charges, practices, regulations, facilities, or services for or in connection with the service rendered pursuant to this part, or make or give any preference to any candidate for public office or subject any such candidate to any prejudice or disadvantage; nor shall any licensee make any contract or other agreement which shall have the effect of permitting any legally qualified candidate for any public office to broadcast to the exclusion of other legally qualified candidates for the same public office.

(d) *Records; inspection.* Every licensee shall keep and permit public inspection of a complete record of all requests for broadcast time made by or on behalf of candidates for public office, together with an appropriate notation showing the disposition made by the licensee of such requests, and the charges made, if any, if request is granted.

§ 3.191 *Rebroadcast.* (a) The term "rebroadcast" means reception by radio of the program [32] of a radio station, and the simultaneous or subsequent retransmission of such program by a broadcast station.[33]

(b) The licensee of a standard broadcast station may, without further authority of the Commission, rebroadcast the program of a United States standard or high frequency broadcast station, provided the Commission is notified of the call letters of each station rebroadcast and the licensee certifies that express authority has been received from the licensee of the station originating the program.[34]

(c) (1) The licensee of the standard broadcast station located within a state or the District of Columbia, may, without further authority of the Commission rebroadcast on a noncommercial basis a noncommercial program of a United States international broadcast station.

(2) The licensee of a standard broadcast station located in any territory or insular possession of the United States may, without further authority of the Commission, rebroadcast any program of a United States international broadcast station.

(3) In the case of any rebroadcast under the provisions of this paragraph, the Commission shall be notified of the call letters of each station whose programs are rebroadcast and the licensee shall certify that express authority has been received from the licensee of the station originating the program.

(d) No licensee of a standard broadcast station shall rebroadcast the program of any other class of United States radio station without written authority having first been obtained from the Commission upon application accompanied by written consent or certification of consent of the licensee of the station originating the program.[35] [36] [37]

(e) In case of a program rebroadcast by several standard broadcast stations, such as a chain rebroadcast, the person legally responsible for distributing the program or the network facilities may obtain the necessary authorization for the entire rebroadcast both from the Commission and from the person or licensee of the station originating the program.

Attention is directed to section 325 (b) of the Communications Act of 1934, which reads as follows:

> No person shall be permitted to locate, use, or maintain a radio broadcast studio or other place or apparatus from which or whereby sound waves are converted into electrical energy, or mechanical or physical reproduction of sound waves produced, and caused to be transmitted or delivered to a radio station in a foreign country for the purpose of being broadcast from any radio station there, having a power output of sufficient intensity, and/or being so located geographically that its emissions may be received consistently in the United States, without first obtaining a permit from the Commission upon proper application therefor.[38]

§ 3.192 *Lotteries and give-away programs.*[39] (a) An application for construction permit, license, renewal of license, or any other authorization for the operation of a broadcast station, will not be granted where the applicant proposes to follow or continue to follow a policy or practice of broadcasting or permitting "the broadcasting of any advertisement of or information concerning any lottery, gift enterprise, or similar scheme, offering prizes dependent in whole or in part upon lot or chance, or any list of the prizes drawn or awarded by means of any such lottery, gift enterprise, or scheme, whether said list contains any part or all of such prizes." (See 18 U. S. C. 1304.)

(b) The determination whether a particular program comes within the provisions of paragraph (a) of this section depends on the facts of each case. However, the Commission will in any event consider that a program comes within the provisions of paragraph (a) of this section if in connection with such program a prize consisting of money or thing of value is awarded to any person whose selection is dependent in whole or in part upon lot or chance, if as a condition of winning or competing for such prize:

(1) Such winner or winners are required to furnish any money or thing of value or are required to have in their possession any product sold, manufactured, furnished or distributed by a sponsor of a program broadcast on the station in question; or

(2) Such winner or winners are required to be listening to or viewing the program in question on a radio or television receiver; or

(3) Such winner or winners are required to answer correctly a question, the answer to which is given on a program broadcast over the station in question or where aid to answering the question correctly is given on a program broadcast over the station in question. For the purposes of this provision the broadcasting of the question to be answered over the radio station on a previous program will be considered as an aid in answering the question correctly; or

(4) Such winner or winners are required to answer the phone in a pre-

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[32] As used in § 3.191, program includes any complete program or part thereof, or any signals if other than A–3 emission.

[33] In case a program is transmitted from its point of origin to a broadcast station entirely by telephone facilities in which a section of such transmission is by radio, the broadcasting of this program is not considered a rebroadcast.

[34] The notice and certification of consent shall be given within 3 days of any single rebroadcast, but in case of the regular practice of rebroadcasting certain programs of a standard broadcast station on several times during a license period, notice and certification of consent shall be given for the ensuing license period with the application for renewal of license, or at the beginning of such rebroadcast practice if begun during a license period.

[35] The broadcasting of a program relayed by a remote pick-up broadcast station (§ 4.401 of this chapter) is not considered a rebroadcast.

[36] Informal application may be employed.

[37] By Order No. 82, dated and effective June 24, 1941, until further order of the Commission, § 3.191 (d) is suspended only insofar as it requires prior written authority of the Commission for the rebroadcasting of programs originated for that express purpose by United States Government radio stations.

[38] See § 1.327 of this chapter.

[39] NOTE: Order of Sept. 21, 1949, 14 F. R. 5999, Oct. 1, 1949, provides that the effective date of § 3.192 be postponed until a date to be fixed by further order, which shall be at least thirty days after a final decision by the Supreme Court of the United States, or thirty days after the time within which an appeal to the Supreme Court may be taken has expired without such an appeal being taken, in pending litigation with respect to this section.

scribed manner or with a prescribed phrase, or are required to write a letter in a prescribed manner or containing a prescribed phrase, if the prescribed manner of answering the phone or writing the letter or the prescribed phrase to be used over the phone or in the letter (or an aid in ascertaining the prescribed phrase or the prescribed manner of answering the phone or writing the letter) is, or has been, broadcast over the station in question.

SUBPART B—RULES GOVERNING FM BROADCAST STATIONS

CLASSIFICATION OF FM BROADCAST STATIONS AND ALLOCATION OF FREQUENCIES

§ 3 201 *Numerical designation of FM broadcast channels.* For convenience, the frequencies available for FM broadcasting (including those assigned to noncommercial educational broadcasting) are given numerical designations which are shown in the table below:

Frequency (Mc):	*Channel No.*	Frequency (Mc):	*Channel No.*
88.1	201	93.7	229
88.3	202	93.9	230
88.5	203	94.1	231
88.7	204	94.3	232
88.9	205	94.5	233
89.1	206	94.7	234
89.3	207	94.9	235
89.5	208	95.1	236
89.7	209	95.3	237
89.9	210	95.5	238
90.1	211	95.7	239
90.3	212	95.9	240
90.5	213	96.1	241
90.7	214	96.3	242
90.9	215	96.5	243
91.1	216	96.7	244
91.3	217	96.9	245
91.5	218	97.1	246
91.7	219	97.3	247
91.9	220	97.5	248
92.1	221	97.7	249
92.3	222	97.9	250
92.5	223	98.1	251
92.7	224	98.3	252
92.9	225	98.5	253
93.1	226	98.7	254
93.3	227	98.9	255
93.5	228	99.1	256
99.3	257	103.7	279
99.5	258	103.9	280
99.7	259	104.1	281
99.9	260	104.3	282
100.1	261	104.5	283
100.3	262	104.7	284
100.5	263	104.9	285
100.7	264	105.1	286
100.9	265	105.3	287
101.1	266	105.5	288
101.3	267	105.7	289
101.5	268	105.9	290
101.7	269	106.1	291
101.9	270	106.3	292
102.1	271	106.5	293
102.3	272	106.7	294
102.5	273	106.9	295
102.7	274	107.1	296
102.9	275	107.3	297
103.1	276	107.5	298
103.3	277	107.7	299
103.5	278	107.9	300

§ 3.202 *Areas of the United States.* For the purpose of allocation the United States is divided into two areas. The first area—area I—includes southern New Hampshire; all of Massachusetts, Rhode Island, and Connecticut; southeastern New York as far north as Albany-Troy-Schenectady; all of New Jersey, Delaware, and the District of Columbia; Maryland as far west as Hagerstown; and eastern Pennsylvania as far west as Harrisburg.[1] The second area—area II—comprehends the remainder of the United States not included in area I.

§ 3.203 *Class A stations.* (a) A Class A station is a station which operates on a Class A channel and is designed to render service primarily to a community or to a city or town other than the principal city of an area, and the surrounding rural area. The coverage of a Class A station shall be not more than the equivalent[2] of 1 kilowatt effective radiated power and antenna height of 250 feet above average terrain, as determined by the methods prescribed in the Standards of Good Engineering Practice Concerning FM Broadcast Stations. A Class A station will not be licensed with more than 1 kilowatt effective radiated power. The power rating of the transmitter used for a Class A station shall be not less than 250 watts nor more than 1 kilowatt. The signal intensity requirements of section 2 of the Standards of Good Engineering Practice Concerning FM Broadcast Stations shall determine the minimum coverage of a Class A station. Class A stations will normally be protected to the 1 mv/m contour; however, assignments will be made in a manner to insure, insofar as possible, a maximum of service to all listeners, whether urban or rural, giving consideration to the minimum signal capable of providing service.

(b) The following frequencies, except as provided in paragraph (c) of this section, are designated as Class A channels and are assigned for use by Class A stations:

Frequency (Mc):	*Channel No.*	Frequency (Mc):	*Channel No*
92.1	221	100.1	261
92.7	224	100.9	265
93.5	228	101.7	269
94.3	232	102.3	272
95.3	237	103.1	276
95.9	240	103.9	280
96.7	244	104.9	285
97.7	249	105.5	288
98.3	252	106.3	292
99.3	257	107.1	296

These channels are available for assignment (1) in cities which are not the central city or cities of a metropolitan district, and (2) in central cities of metropolitan districts which have fewer than six Class B stations.

(c) In the Territory of Hawaii, the frequency band 98–108 Mc is allocated for nonbroadcast use. The frequencies 98.1 through 107.9 Mc, inclusive (Channels 251 through 300 inclusive) will not be assigned in the Territory of Hawaii for use by FM broadcast stations.

§ 3.204 *Class B stations.* **(a) A Class B station is a station which operates on a Class B channel and is designed to render service primarily to a metropolitan district or principal city and the surrounding rural area, or to rural areas removed from large centers of population. The service area of a Class B station will not be protected beyond the 1 mv/m contour; however, Class B assignments will be made in a manner to insure, insofar as possible, a maximum of service to all listeners, whether urban or rural, giving consideration to the minimum signal capable of providing service. Standard power ratings of transmitters used for Class B stations shall be 1 kw. or greater. The signal intensity requirements of section 2 of the Standards of Good Engineering Practice Concerning FM Broadcast Stations shall determine the minimum coverage of a Class B station. In the following subparagraphs antenna height above average terrain and effective radiated power are to be determined by the methods prescribed in the Standards of Good Engineering Practice Concerning FM Broadcast Stations.**

(1) The coverage of a Class B station in Area I shall be not more than the equivalent[3] of 20 kilowatts effective radiated power and antenna height of 500 feet above average terrain.[4] A Class B station in Area I will not be licensed with an effective radiated power greater than 20 kilowatts.

(2) The coverage of a Class B station in Area II shall normally be not more than the equivalent[5] of 20 kilowatts effective radiated power and antenna height of 500 feet above average terrain.[6] The use of greater power and antenna height will be encouraged in those portions of Area II where such use would not result in undue interference to stations already authorized or to probable assignments insofar as can be deter-

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[1] In some of the territory contiguous to area I, the demand for frequencies requires that applications be given careful study and consideration to insure an equitable distribution of facilities throughout the region. This region includes the remainder of Maryland, Pennsylvania, and New York (except the northeastern corner) not included in area I; Virginia, West Virginia, North Carolina, South Carolina, Ohio, and Indiana; southern Michigan as far north as Saginaw; eastern Illinois as far west as Rockford-Decatur; and southeastern Wisconsin as far north as Sheboygan. Other regions may be added as required.

[2] For the purpose of determining equivalent coverage, the 1 mv/m contour should be used.

[3] For the purpose of determining equivalent coverage, the 1 mv/m contour should be used.

[4] In the determination of appropriate coverage, consideration should be given to population distribution, terrain, service from other FM stations, trade area, and other economic factors. Among the recognized trade area authorities are the following: J. Walter Thompson (Retail Shopping Areas), Hearst Magazines, Inc. (Consumer Trading Areas), Rand McNally Map Co. (Trading Areas), and Hagstrom Map Co. (Four color Retail Trading Area Map).

[5] For the purpose of determining equivalent coverage, the 1 mv/m contour should be used.

[6] In the determination of appropriate coverage, consideration should be given to population distribution, terrain, service from other FM stations, trade area, and other economic factors. Among the recognized trade area authorities are the following: J. Walter Thompson (Retail Shopping Areas), Hearst Magazines, Inc. (Consumer Trading Areas), Rand McNally Map Co. (Trading Areas), and Hagstrom Map Co. (Four color Retail Trading Area Map).

mined at the time of the grant. In such case, the power, antenna height, and area will be determined on the merits of each application with particular attention being given to rural areas which would not otherwise receive service.

(b) The following frequencies except as provided in paragraph (c) of this section, are designated as Class B channels and are assigned for use by Class B stations:

Frequency (Mc):	*Channel No.*	Frequency (Mc):	*Channel No.*
92.3	222	100.3	262
92.5	223	100.5	263
92.9	225	100.7	264
93.1	226	101.1	266
93.3	227	101.3	267
93.7	229	101.5	268
93.9	230	101.9	270
94.1	231	102.1	271
94.5	233	102.5	273
94.7	234	102.7	274
94.9	235	102.9	275
95.1	236	103.3	277
95.5	238	103.5	278
95.7	239	103.7	279
96.1	241	104.1	281
96.3	242	104.3	282
96.5	243	104.5	283
96.9	245	104.7	284
97.1	246	105.1	286
97.3	247	105.3	287
97.5	248	105.7	289
97.9	250	105.9	290
98.1	251	106.1	291
98.5	253	106.5	293
98.7	254	106.7	294
98.9	255	106.9	295
99.1	256	107.3	297
99.5	258	107.5	298
99.7	259	107.7	299
99.9	260	107.9	300

(c) In the Territory of Hawaii the frequency band 98–108 Mc is allocated for nonbroadcast use. The frequencies 98.1 through 107.9 Mc inclusive (Channels 251 through 300, inclusive) will not be assigned in the Territory of Hawaii for use by FM broadcast stations.

§ 3.205 *Station location and program origination.* (a) Except as provided in paragraph (b) of this section, each FM broadcast station will be licensed to serve primarily a particular city, town, or other political subdivision which will be specified in the station license and the station will be considered to be located in such place. Each station shall maintain a studio, which will be known as the main studio, in the place where the station is located provided that the main studio may be located at the transmitter site whether or not the transmitter site is in the place where the station is located. A majority (computed on the basis of duration and not number) of a station's programs or in the case of a station affiliated with a network, two-thirds of such station's non-network programs, whichever is smaller, shall originate from the main studio or from other studios or remote points situated in the place where the station is located.

(b) Stations will be licensed to serve more than one city, town, or other political subdivision, only where a satisfactory showing is made that each such place meets all the requirements of the rules and Standards of Good Engineering Practice with respect to the location of main studios; that the station can and will originate a substantial number of local live programs from each such place; and that the requirements as to origination of programs contained in paragraph (a) of this section would place an unreasonable burden on the station if it were licensed to serve only one city, town or other political subdivision. A station licensed to serve more than one place shall be considered to be located in and shall maintain main studios in each such place. With respect to such station the requirements as to origination of programs contained in paragraph (a) of this section shall be satisfied by the origination of programs from any or all of the main studios or from other studios and remote points situated in any or all of the places in which the main studios are located.

(c) The transmitter of each FM broadcast station shall be so located that satisfactory service is delivered to the city where the main studio is located, in accordance with the Standards of Good Engineering Practice Concerning FM Broadcast Stations: *Provided, however,* Upon special showing of need, authorization may be granted to locate the transmitter so that adequate service is not rendered to this city, but in no event shall this city be beyond the 50 uv/m contour.

RULES GOVERNING ADMINISTRATIVE PROCEDURE

§ 3.211 *Application for FM broadcast stations.* If the application is for a construction permit or for modification of an existing authorization, FCC Form 301 shall be filed; if for a license, FCC Form 302 shall be filed; if for a renewal of license, FCC Form 303 shall be filed.

§ 3.212 *Full disclosures.* Each application shall contain full and complete disclosures with regard to the real party or parties in interest, and their legal, technical, financial, and other qualifications, and as to all matters and things required to be disclosed by the application forms.

§ 3.213 *Installation of apparatus.* Applications for construction permits or modification thereof involving the installation of new transmitting apparatus should be filed at least 60 days prior to the contemplated installation.

§ 3.214 *Period of construction.* Each construction permit will specify a maximum of 60 days from the date of granting thereof as the time within which construction of the station shall begin, and a maximum of 6 months thereafter as the time within which construction shall be completed and the station ready for operation, unless otherwise determined by the Commission upon proper showing in any particular case.

§ 3.215 *Forfeiture of construction permits: extension of time.* (a) A construction permit shall be automatically forfeited if the station is not ready for operation within the time specified therein or within such further time as the Commission may have allowed for completion, and a notation of the forfeiture of any construction permit under this provision will be placed in the records of the Commission as of the expiration date.

(b) Any application for extension of time (FCC Form 701) within which to construct a station shall be filed at least 30 days prior to the expiration date of such permit if the facts supporting such application for extension are known to the applicant in time to permit such filing. In other cases such applications will be accepted upon a showing satisfactory to the Commission of sufficient reasons for filing within less than 30 days prior to the expiration date. Such applications will be granted upon a specific and detailed showing that the failure to complete was due to causes not under the control of the grantee, or upon a specific and detailed showing of other matters sufficient to justify the extension.

(c) If a construction permit has been allowed to expire for any reason, application may be made for a new permit on FCC Form 321, "Application for Construction Permit to Replace Expired Permit."

§ 3.216 *Equipment tests.* (a) During the process of construction of an FM broadcast station, the permittee, after notifying the Commission and Engineer in Charge of the radio district in which the station is located, may without further authority of the Commission, conduct equipment tests for the purpose of such adjustments and measurements as may be necessary to assure compliance with the terms of the construction permit, the technical provisions of the application therefor, the rules and regulations, and the applicable engineering standards.

(b) The Commission may notify the permittee to conduct no tests or may cancel, suspend, or change the date for the beginning of equipment tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Equipment tests may be continued so long as the construction permit shall remain valid.

(d) Inspection of a station will ordinarily be required during the equipment test period and before the commencement of the program test. After construction and after adjustments and measurements have been completed to show compliance with the terms of the construction permit, the technical provisions of the application therefor, the rules and regulations and the applicable engineering standards, the permittee should notify the Engineer in Charge of the radio district in which the station is located that it is ready for inspection.

(e) The authorization for tests embodied in this section shall not be construed as constituting a license to operate but as a necessary part of construction.

§ 3.217 *Program tests.* (a) Upon completion of construction of an FM broadcast station in accordance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations and the applicable engineering standards, and when an application for station license has been filed showing the station to be in satisfactory operating condition,[7] the permittee may request authority to conduct program tests: *Provided*, That such request shall be filed with the Commission at least ten (10) days prior to the date on which it is desired to begin such operation and that the Engineer in Charge of the radio district in which the station is located is notified.

(b) Program tests shall not commence until specific Commission authority is received. The Commission reserves the right to change the date of the beginning of such tests or to suspend or revoke the authority for program tests as and when such action may appear to be in the public interest, convenience, and necessity

(c) Unless sooner suspended or revoked program test authority continues valid during Commission consideration of the application for license and during this period further extension of the construction permit is not required. Program test authority shall be automatically terminated by final determination upon the application for station license.

(d) All operation under program test authority shall be in strict compliance with the rules governing FM broadcast stations and in strict accordance with representations made in the application for license pursuant to which the tests were authorized.

(e) The granting of program test authority shall not be construed as approval by the Commission of the application for station license.

§ 3.218 *Normal license period.* (a) All FM broadcast station licenses will be issued for a normal license period of three years. Licenses will be issued to expire at the hour of 3:00 a. m., e. s. t. in accordance with the following schedule and at three-year intervals thereafter.[1]

(1) For stations located in Delaware and Pennsylvania, August 1, 1951.

(2) For stations located in Maryland, District of Columbia, Virginia, West Virginia, October 1, 1951

(3) For stations located in North Carolina, South Carolina, December 1, 1951.

(4) For stations located in Florida, Puerto Rico and Virgin Islands, February 1, 1952.

(5) For stations located in Alabama and Georgia, April 1, 1952.

(6) For stations located in Arkansas, Louisiana and Mississippi, June 1, 1952.

(7) For stations located in Tennessee, Kentucky and Indiana, August 1 1952.

(8) For stations located in Ohio and Michigan, October 1, 1952.

(9) For stations located in Illinois and Wisconsin, December 1, 1952.

(10) For stations located in Iowa and Missouri, February 1, 1953.

(11) For stations located in Minnesota, North Dakota, South Dakota, Montana and Colorado, April 1, 1953.

(12) For stations located in Kansas, Oklahoma, Nebraska, June 1, 1953.

(13) For stations located in Texas, August 1, 1953.

(14) For stations located in Wyoming, Nevada, Arizona, Utah, New Mexico and Idaho, October 1, 1953.

(15) For stations located in California, December 1, 1953.

(16) For stations located in Washington, Oregon, Alaska and Hawaii, February 1, 1954.

(17) For stations located in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont, April 1, 1954.

(18) For stations located in New Jersey and New York, June 1, 1954.

§ 3.219 *License, simultaneous modification and renewal.* When an application is granted by the Commission necessitating the issuance of a modified license less than 60 days prior to the expiration date of the license sought to be modified, and an application for renewal of said license is granted subsequent or prior thereto (but within 30 days of expiration of the present license) the modified license as well as the renewal license shall be issued to conform to the combined action of the Commission.

§ 3.220 *Renewal of license.* (a) Unless otherwise directed by the Commission, each application for renewal of an FM broadcast station license shall be filed at least 90 days prior to the expiration date of the license sought to be renewed (FCC Form 303). No application for renewal of license of an FM broadcast station will be considered unless there is on file with the Commission, the information currently required by §§ 1.341 to 1.344 of this chapter, reference to which by date and file number shall be included in the application.

(b) Whenever the Commission regards an application for a renewal of an FM broadcast station license as essential to the proper conduct of a hearing or investigation, and specifically directs that it be filed by a date certain, such application shall be filed within the time thus specified. If the licensee fails to file such application within the prescribed time, the hearing or investigation shall proceed as if such renewal application had been received.

§ 3.221 [Reserved.]

§ 3.222 *Repetitious applications.* (a) Where an applicant has been afforded an opportunity to be heard with respect to a particular application for a new FM broadcast station, or for change of existing service or facilities, and the Commission has, after hearing or default, denied the application or dismissed it with prejudice, the Commission will not consider another application for a station of the same class to serve in whole or in part the same area, by the same applicant or by his successor or assignee, or on behalf of or for the benefit of the original parties in interest, until after the lapse of 12 months from the effective date of the Commission's order.

(b) Where an appeal has been taken from the action of the Commission in denying a particular application, another application for the same class of broadcast station and for the same area, in whole or in part, filed by the same applicant or by his successor or assignee, or on behalf or for the benefit of the original parties in interest, will not be considered until the final disposition of such appeal.

§ 3.223 *Assignment or transfer of control*—(a) *Voluntary.* Application for consent to voluntary assignment of an FM broadcast station construction permit or license or for consent to voluntary transfer of control of a corporation holding an FM broadcast station construction permit or license shall be filed with the Commission on FCC Form 314 (Assignment of Licensee), FCC Form 315 (Transfer of Control) or FCC Form 316 (Short Form) at least 60 days prior to the contemplated effective date of assignment or transfer of control.

(b) *Pro forma.* Assignment or transfer applications shall be filed on FCC Form 316 where:

(1) There is an assignment from an individual or individuals (including partnerships) to a corporation owned and controlled by such individuals or partnerships without any substantial change in their relative interests;

(2) There is an assignment from a corporation to its individual stockholders without effecting any substantial change in the disposition of their interests;

(3) There is an assignment or transfer by which certain partners or stockholders retire but no new ones are brought in, provided that the interest transferred is not a controlling one;

(4) There is a corporate reorganization which involves no substantial change in the beneficial ownership of the corporation;

(5) There is an involuntary transfer to an Executor, Administrator or other court appointed officer caused by death or legal disability except that this form does not cover assignments (or transfers) from the Executor, Administrator or other court appointed officers to the ultimate beneficiary;

(6) There is an assignment or transfer from a corporation to a wholly owned subsidiary thereof or vice versa, or where there is an assignment from a corporation to a corporation owned or controlled by the assignor stockholders without substantial change in their interests.

(7) There is an assignment of less than a controlling interest in a partnership.

(c) *Involuntary.* In the event of the death or legal disability of a permittee or licensee, or a member of a partnership, or a person directly or indirectly in control of a corporation, which is a permittee or licensee:

(1) The Commission shall be notified

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[7] All data necessary to show compliance with the terms and conditions of the construction permit must be filed with the license application.

[1] Renewals of licenses will be granted for the period specified in the rule: *Provided, however*, That if as a result of the transition from the present schedule to the proposed schedule the period for which a license is renewed is 6 months or less the licensee may within 30 days of the expiration date of such renewed license file, in lieu of renewal application (FCC Form 303), a written application under oath for the next renewal of license which shall consist of (1) a request that its license be renewed and (2) a statement that no substantial changes have been made in its operations or in its plans for future operations since its last renewal application; or if changes have been made or proposed a statement specifying such changes. Upon review of such statement the Commission may grant a renewal of license for the full period provided for in the rule; or if the Commission requires additional information it may require the filing of renewal application (FCC Form 303).

in writing promptly of the occurrence of such death or legal disability, and

(2) Within 30 days after the occurrence of such death or legal disability, application on FCC Form 316 shall be filed for consent to involuntary assignment of such FM broadcast station permit or license or for involuntary transfer of control of such corporation to a person or entity legally qualified to succeed to the foregoing interests under the laws of the place having jurisdiction over the estate involved.

RULES RELATING TO LICENSING POLICIES

§ 3.231 *Exclusive affiliation of station.* No license shall be granted to an FM broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization[8] under which the station is prevented or hindered from, or penalized for, broadcasting the programs of any other network organization.

§ 3.232 *Territorial exclusivity.* No license shall be granted to an FM broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which prevents or hinders another broadcast station serving substantially the same area from broadcasting the network's programs not taken by the former station, or which prevents or hinders another broadcast station serving a substantially different area from broadcasting any program of the network organization. This section shall not be construed to prohibit any contract, arrangement, or understanding between a station and a network organization pursuant to which the station is granted the first call in its primary service area upon the programs of the network organization.

§ 3.233 *Term of affiliation.* No license shall be granted to an FM broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which provides, by original terms, provisions for renewal, or otherwise for the affiliation of the station with the network organization for a period longer than 2 years: *Provided,* That a contract, arrangement, or understanding for a period up to 2 years, may be entered into within 6 months prior to the commencement of such period.

§ 3.234 *Option time.* No license shall be granted to an FM broadcast station which options[9] for network programs any time subject to call on less than 56 days' notice, or more time than a total of 3 hours[10] within each of four segments of the broadcast day, as herein described. The broadcast day is divided into four segments, as follows: 8 a. m. to 1 p. m.; 1 p. m. to 6 p. m.; 6 p. m. to 11 p. m.; 11 p. m. to 8 a. m.[11] Such options may not be exclusive as against other network organizations and may not prevent or hinder the station from optioning or selling any or all of the time covered by the option, or other time, to other network organizations.

§ 3.235 *Right to reject programs.* No license shall be granted to an FM broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which (a), with respect to programs offered pursuant to an affiliation contract, prevents or hinders the station from rejecting or refusing network programs which the station reasonably believes to be unsatisfactory or unsuitable; or which (b), with respect to network programs so offered or already contracted for, prevents the station from rejecting or refusing any program which, in its opinion, is contrary to the public interest, or from substituting a program of outstanding local or national importance.

§ 3.236 *Network ownership of stations.* No license shall be granted to a network organization, or to any person directly or indirectly controlled by or under common control[12] of a network organization, for an FM broadcast station in any locality where the existing FM broadcast stations are so few or of such unequal desirability (in terms of coverage, power, frequency, or other related matters) that competition would be substantially restrained by such licensing.

§ 3.237 *Dual network operation.* No license shall be issued to an FM broadcast station affiliated with a network organization which maintains more than one network of FM broadcast stations: *Provided,* That this section shall not be applicable if such networks are not operated simultaneously, or if there is no substantial overlap in the territory served by the group of stations comprising each such network.

§ 3.238 *Control by networks of station rates.* No license shall be granted to an FM broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization under which the station is prevented or hindered from, or penalized for, fixing or altering its rates for the sale of broadcast time for other than the network's programs.

§ 3.239 *Use of common antenna site.* No FM broadcast station license or renewal of FM broadcast station license will be granted to any person who owns, leases, or controls a particular site which is peculiarly suitable for FM broadcasting in a particular area and (a) which is not available for use by other FM broadcast station licensees; and (b) no other comparable site is available in the area; and (c) where the exclusive use of such site by the applicant or licensee would unduly limit the number of FM broadcast stations that can be authorized in a particular area or would unduly restrict competition among FM broadcast stations.

§ 3.240 *Multiple ownership.* (a) No person (including all persons under common control)[13] shall, directly or indirectly, own, operate, or control more than one FM broadcast station that would serve substantially the same service area as another FM broadcast station owned, operated, or controlled by such person.

(b) No person (including all persons under common control) shall, directly or indirectly, own, operate, or control more than one FM broadcast station, except upon a showing (1) that such ownership, operation, or control would foster competition among FM broadcast stations or provide an FM broadcasting service distinct and separate from existing services, and (2) that such ownership, operation, or control would not result in the concentration of control of FM broadcasting facilities in a manner inconsistent with public interest, convenience, or necessity: *Provided, however,* That the Commission will consider the ownership, operation, or control of more than six FM broadcast stations to constitute the concentration of control of FM broadcasting facilities in a manner inconsistent with public interest, convenience, or necessity.

§ 3.241 *Special rules relating to contracts providing for reservation of time upon sale of a station.* (a) No license, renewal of license, assignment of license, or transfer of control of a corporate licensee shall be granted or authorized to a FM broadcast station which has a contract, arrangement or understanding, express or implied, pursuant to which, as consideration or partial consideration for the assignment of license or transfer of control, the assignor of a station license or the transferor of stock, where transfer of a corporate licensee is involved, or the nominee of such assignor or transferor retains any right of reversion of the license or any right to the reassignment of the license in the future, or reserves the right to use the facilities of the station for any period whatsoever.

(b) In the case of assignment of license or transfer of control of a corporate licensee approved by the Commission before the effective date of this section, February 15, 1949, involving a contract, arrangement or understanding of the type covered by paragraph (a) of this section and the existence and terms of which were fully disclosed to the Commission at the time of execution, the Commission will give consideration to the issuance of a license despite the existence of such contract, arrangement or understanding, if the parties thereto modify such contract within 6 months from the effective date of this section Such modification will be considered on the facts of each case but no such modification will be approved unless the modified contract contains at least the following provisions:

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[8] The term "network organization" as used herein includes national and regional network organizations. See ch. VII, J of Report on Chain Broadcasting.

[9] As used in this section, an option is any contract, arrangement, or understanding, express or implied, between a station and a network organization which prevents or hinders the station from scheduling programs before the network agrees to utilize the time during which such programs are scheduled, or which requires the station to clear time already scheduled when the network organization seeks to utilize the time.

[10] All time options permitted under this section must be specified clock hours, expressed in terms of any time system set forth in the contract agreed upon by the station and network organization. Shifts from daylight saving to standard time or vice versa may or may not shift the specified hours correspondingly as agreed by the station and network organization.

[11] These segments are to be determined for each station in terms of local time at the location of the station but may remain constant throughout the year regardless of shifts from standard to daylight saving time or vice versa.

[12] The word "control" as used herein is not limited to majority stock ownership, but includes actual working control in whatever manner exercised.

[13] The word "control" as used herein is not limited to majority stock ownership, but includes actual working control in whatever manner exercised.

(1) A maximum limitation of the time subject to reservation so that no more than 12 hours per week shall be subject to reservation, of which no more than 4 hours shall be on any given day.

(2) A clause providing that the licensee reserves the right to reject or refuse programs which he reasonably believes to be unsatisfactory or unsuitable or for which, in his opinion, a program of outstanding local or national importance should be substituted, but provision may be made for the substitution of other radio time for programs so rejected or for the payment at the station card rate for the time made unavailable.

(3) A prohibition against the resale or reassignment of any of the broadcast time reserved by such modified contract.

(4) An express negation of any right with respect to reversion or reassignment of license.

(5) An express provision setting forth a definite expiration date of the contract arrangement or understanding. Such expiration date shall not extend beyond February 15, 1964, and shall in no event extend beyond the expiration date originally provided for in any such contract, agreement or understanding, in the event that such expiration date is a date prior to February 15, 1964.

(6) An express provision giving to the licensee the right to terminate the contract, arrangement or understanding for substantial cause, including, but not limited to, the assignment of license or the transfer of control of a corporate licensee, consistent disagreement over programs between the parties, or the acquisition of a network affiliation by the licensee, upon the payment of a lump sum or periodic payments, and providing that the amount initially fixed shall thereafter decrease as the amount of time reserved is decreased by performance of the contract. Any such payment should not be so unduly large as to constitute in practice an effective deterrent to the licensee exercising the right. In determining whether the amount is unduly large, the Commission will consider the amount by which consideration in return for the transfer of the station was decreased by reason of the reservation of time or the present value of the radio time still reserved and unused as of the date of the exercise of the right of termination.

RULES RELATING TO EQUIPMENT

§ 3.251 *Transmitter power.* The standard power rating and operating power range of transmitters shall be in accordance with the Standards of Good Engineering Practice Concerning FM Broadcast Stations.

§ 3.252 *Frequency monitor.* (a) The licensee of each station shall have in operation, either at the transmitter or at the place where the transmitter is controlled, a frequency monitor of a type approved by the Commission which shall be independent of the frequency control of the transmitter.

(b) In the event that the frequency monitor becomes defective the station may be operated without the monitor pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: *Provided*, That:

(1) Appropriate entries shall be made in the operating log of the station showing the date and time the monitor was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the monitor is found to be defective and immediately after the repaired or replacement monitor has been installed and is functioning properly.

(3) The frequency of the station shall be compared with an external frequency source of known accuracy at sufficiently frequent intervals to insure that the frequency is maintained within the tolerance prescribed in § 3.269. An entry shall be made in the station log as to the method used and the results thereof.

(c) If conditions beyond the control of the licensee prevent the restoration of the monitor to service within the above allowed period, informal request in accordance with § 1.332 (d) of this chapter may be filed with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

§ 3.253 *Modulation monitor.* (a) The licensee of each station shall have in operation, either at the transmitter or at the place where the transmitter is controlled, a modulation monitor of the type approved by the Commission.

(b) In the event that the modulation monitor becomes defective the station may be operated without the monitor pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: *Provided*, That:

(1) Appropriate entries shall be made in the operating log of the station showing the date and time the monitor was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the monitor is found to be defective and immediately after the repaired or replacement monitor has been installed and is functioning properly.

(3) During the period when the station is operated without the modulation monitor the licensee shall provide other suitable means for insuring that the modulation is maintained within the tolerance prescribed in § 3.268.

(c) If conditions beyond the control of the licensee prevent the restoration of the monitor to service within the above allowed period, informal request in accordance with § 1.332 (d) of this chapter may be filed with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

§ 3.254 *Required transmitter performance.* (a) The construction, installation, operation and performance of the FM broadcast transmitting system shall be in accordance with the Standards of Good Engineering Practice Concerning FM Broadcast Stations (Sections 8 and 13). The licensee of each FM broadcast station shall make the following equipment performance measurements at least at yearly intervals. (One such set of measurements shall be made during the four-month period preceding the date of filing application for renewal of station license.)

(1) Audio frequency response from 50 to 15,000 cycles for approximately 25, 50 and 100 percent modulation. Measurements shall be made on at least the following audio frequencies: 50, 100, 400, 1000, 5000, 10,000 and 15,000 cycles. The frequency response measurements should normally be made without deemphasis; however, standard 75 microsecond deemphasis may be employed in the measuring equipment or system provided the accuracy of the deemphasis circuit is sufficient to insure that the measured response is within the prescribed limits.

(2) Audio frequency harmonic distortion for 25, 50 and 100 percent modulation for the fundamental frequencies of 50, 100, 400, 1000, and 5000 cycles. Audio frequency harmonics for 100 percent modulation for fundamental frequencies of 10,000 and 15,000 cycles. Measurements shall normally include harmonics to 30,000 cycles. The distortion measurements shall be made employing 75 microsecond deemphasis in the measuring equipment or system.

(3) Output noise level (frequency modulation) in the band of 50 to 15,000 cycles in decibels below the audio frequency level representing a frequency swing of 75 kilocycles. The noise measurements shall be made employing 75 microsecond deemphasis in the measuring equipment or system.

(4) Output noise level (amplitude modulation) in the band of 50 to 15,000 cycles in decibels below the level representing 100 percent amplitude modulation. The noise measurements shall be made employing 75 microsecond deemphasis in the measuring equipment or system. All measurements shall be made with the equipment adjusted for normal program operation and shall include all circuits between the main studio microphone terminals and the antenna output, including telephone lines, preemphasis circuits and any equalizers employed except for microphones, and

without compression if a compression amplifier is installed.

(b) The above data, diagrams and appropriate graphs together with a description of measurement procedures and instruments, signed by the engineer making the measurements, shall be kept on file at the transmitter and shall be made available upon request to any duly authorized representative of the Federal Communications Commission.

§ 3.255 *Auxiliary transmitter.* Upon showing that a need exists for the use of an auxiliary transmitter in addition to the regular transmitter of an FM broadcast station, a license therefor may be issued: *Provided*, That:

(a) An auxiliary transmitter may be installed either at the same location as the main transmitter or at another location.

(b) A licensed operator shall be in control whenever an auxiliary transmitter is placed in operation.

(c) The auxiliary transmitter shall be maintained so that it may be put into immediate operation at any time for the following purposes:

(1) The transmission of the regular programs upon the failure of the main transmitter.

(2) The transmission of regular programs during maintenance or modification[14] work on the main transmitter, necessitating discontinuance of its operation for a period not to exceed 5 days.

(3) Upon request by a duly authorized representative of the Commission.

(d) The auxiliary transmitter shall be tested at least once each week to determine that it is in proper operating condition and that it is adjusted to the proper frequency, except that in case of operation in accordance with paragraph (c) of this section during any week, the test in that week may be omitted provided the operation under paragraph (c) is satisfactory. A record shall be kept of the time and result of each test operating under paragraph (c). Tests shall be conducted only between midnight and 6 a. m., local standard time.

(e) The auxiliary transmitter shall be equipped with satisfactory control equipment which will enable the maintenance of the frequency emitted by the station within the limits prescribed by the regulations in this part.

(f) The operating power of an auxiliary transmitter may be less than the authorized power of the main transmitter, but in no event shall it be greater than such power.

§ 3.256 *Alternate main transmitters.* The licensee of an FM broadcast station may be licensed for alternate main transmitters provided that a technical need[15] for such alternate transmitters is shown and that the following conditions are met:

(a) Both transmitters are located at the same place.

(b) Both transmitters shall have the same power rating.

(c) Both transmitters shall meet the construction, installation, operation, and performance requirements of the Standards of Good Engineering Practice Concerning FM Broadcast Stations.

§ 3.257 *Changes in equipment and antenna system.* Licensees of FM broadcast stations shall observe the following provisions with regard to changes in equipment and antenna system:

(a) No changes in equipment shall be made:

(1) That would result in the emission of signals outside of the authorized channel.

(2) That would result in the external performance of the transmitter being in disagreement with that prescribed in the Standards of Good Engineering Practice Concerning FM Broadcast Stations.

(b) Specific authority, upon filing formal application (FCC Form 301) therefor, is required for a change in service area or for any of the following changes:

(1) Changes involving an increase or decrease in the power rating of the transmitter.

(2) A replacement of the transmitter as a whole.

(3) Change in the location of the transmitting antenna.

(4) Change in antenna system, including transmission line.

(5) Change in location of main studio, if it is proposed to move the main studio to a different city from that specified in the license.

(6) Change in the power delivered to the antenna.

(7) Change in frequency control and/or modulation system.

(8) Change in the authorized transmitter remote control point(s).

(c) Other changes, except as above provided for in this section or in Standards of Good Engineering Practice Concerning FM Broadcast Stations prescribed by the Commission may be made at any time without the authority of the Commission: *Provided*, That the Commission shall be promptly notified thereof and such changes shall be shown in the next application for renewal of license.

§ 3.258 *Indicating instruments.* (a) Each FM broadcast station shall be equipped with indicating instruments, which conform with the specifications set forth in the Standards of Good Engineering Practice Concerning FM Broadcast Stations, for measuring the direct plate voltage and current of the last radio stage and the transmission line radio frequency current, voltage or power. (See "Indicating instruments pursuant to § 3.258" in the Standards of Good Engineering Practice Concerning FM Broadcasting Stations.)

(b) In the event that any one of these indicating instruments becomes defective when no substitute which conforms with the required specifications is available, the station may be operated without the defective instrument pending its repair or replacement for a period not in excess of 60 days: *Provided*, That:

(1) Appropriate entries shall be made in the operating log of the station showing the date and time the meter was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified immediately after the instrument is found to be defective and immediately after the repaired or replaced instrument has been installed and functioning properly.

(3) If the defective instrument is a plate voltmeter or plate ammeter in the last radio stage, the operating power shall be maintained by means of the radio frequency transmission line meter.

(c) If conditions beyond the control of the licensee prevent the restoration of the meter to service within the above allowed period, informal request may be filed in accordance with § 1.332 (d) of this chapter with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

RULES RELATING TO TECHNICAL OPERATION

§ 3.261 *Time of operation.* All FM broadcast stations will be licensed for unlimited time operation. Until further notice a minimum of 6 hours per day of operation will be required, which shall consist of 3 hours during the period 6 a. m. to 6 p. m., local standard time, and 3 hours during the period 6 p. m. to midnight, local standard time. In an emergency, however, when due to causes beyond the control of a licensee, it becomes impossible to continue operation, the station may cease operation for a period not to exceed 10 days, provided that the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified in writing immediately after the emergency develops.

§ 3.262 *Experimental operation.* The period between 1:00 a. m., and 6:00 a. m., local standard time, may be used for experimental purposes in testing and maintaining apparatus by the licensee of any FM broadcast station on its assigned frequency and not in excess of its authorized power, without specific authorization by the Commission.

§ 3.263 *Station inspection.* The licensee of any FM broadcast station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 3.264 *Station and operator licenses; posting of.* The station license and any other instrument of station authorization and the original license (or FCC Form 759) of each station operator shall be posted in a conspicuous place in the transmitter control room in such manner that all terms thereof are visible.

§ 3.265 *Operator requirements.* (a) One or more radio operators holding a valid radiotelephone first-class operator license, except as provided in this section, shall be in actual charge of the transmitting apparatus and shall be on duty either at the transmitter location or remote control point.

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[14] This includes the equipment changes which may be made without authority as set forth elsewhere in the rules and regulations and the Standards of Good Engineering Practice or as authorized by the Commission by letter or by construction permit. Where such operation is required for periods in excess of 5 days, request therefor shall be in accordance with § 1.324 of this chapter.

[15] Such as licensees maintaining 24-hour schedule and needing alternate operation for maintenance, or where developmental work requires alternate operation.

(b) A station which is authorized with transmitter power output of 10 kilowatts or less may be operated by persons holding commercial radio operator license of any class, except an aircraft radiotelephone operator authorization or a temporary limited radiotelegraph second-class operator license, when the equipment is so designed that the stability of the frequency is maintained by the transmitter itself within the limits of tolerance specified, and none of the operations, except those specified in subparagraphs (1), (2) and (3) of this paragraph, necessary to be performed during the course of normal operation may cause off-frequency operation or result in any unauthorized radiation. Adjustments of transmitting equipment by such operators, except when under the immediate supervision of a radiotelephone first-class operator shall be limited to the following:

(1) Those necessary to commence or terminate transmitter emissions as a routine matter.

(2) Those external adjustments that may be required as a result of variations of primary power supply.

(3) Those external adjustments which may be necessary to insure modulation within the limits required.

Should the transmitting apparatus be observed to be operating in a manner inconsistent with the station's instrument of authorization and none of the above adjustments are effective in bringing it into proper operation, a person holding other than a radiotelephone first-class operator license and not acting under the immediate supervision of a radiotelephone first-class operator, shall be required to terminate the station's emissions.

(c) The licensee of a station which is operated by one or more operators holding other than a radiotelephone first-class operator license shall have one or more operators holding a radiotelephone first-class operator license in regular full-time employment at the station whose primary duties shall be to effect and insure the proper functioning of the transmitting equipment. In the event that the licensee also operates a standard broadcast station in the same community, a regular full-time radiotelephone first-class operator or operators employed in connection with the FM broadcast station may concurrently be employed to satisfy the requirements of § 3.165 (c): *Provided,* That the duties of such operator or operators concerning the standard broadcast transmitting equipment shall in nowise interfere with the proper performance of his duties with respect to the FM broadcast transmitter.

(d) The licensed operator on duty and in charge of an FM broadcast transmitter may, at the discretion of the licensee, be employed for other duties or for the operation of another radio station or stations in accordance with the class of operator's license which he holds and the rules and regulations governing such other stations: *Provided, however,* That such duties shall in nowise interfere with the proper operation of the FM broadcast transmitter.

§ 3.266 *Facsimile broadcasting and multiplex transmission.* (a) FM broadcast stations may transmit simplex facsimile in accordance with transmission standards set forth in the Standards of Good Engineering Practice Concerning FM Broadcast Stations during periods not devoted to FM aural broadcasting. Such transmissions may not exceed one hour during the period between 7 a. m. and midnight (no limit for the hours between midnight and 7 a. m.) and may not be counted toward the minimum operation required by § 3.261. The Commission shall be notified by the licensee of the FM broadcast station of its intent to transmit such facsimile.

(b) FM broadcast stations may, upon securing authorization from the Commission, transmit multiplex facsimile in accordance with transmission standards set forth in the Standards of Good Engineering Practice Concerning FM Broadcast Stations; *Provided,* That the transmission of such facsimile does not reduce the quality of aural programs simultaneously transmitted by the licensee below that required by the Standards of Good Engineering Practice Concerning FM Broadcast Stations and that no degradation of such aural programs will result from such facsimile transmissions when received on FM receivers not equipped with filter or other additional equipment.

§ 3.267 *Operating power; determination and maintenance of.* (a) The operating power of each station shall be determined by the indirect method. This is the product of the plate voltage (E_p) and the plate current (I_p) of the last radio stage, and an efficiency factor, F; that is:

$$\text{Operating power} = E_p \times I_p \times F$$

The efficiency factor, F, shall be established by the transmitter manufacturer for each type of transmitter for which Commission approval is requested, and shall be specified in the instruction books supplied to the customer with each transmitter. In the case of composite equipment the factor, F, shall be furnished to the Commission along with a statement of the basis used in determining such factor.

(b) The operating power of each station shall be maintained as near as practicable to the authorized operating power, and shall not exceed the limits of 5 percent above and 10 percent below the authorized power, except that in an emergency when it becomes impossible to operate with the authorized power, the station may be operated with reduced power for a period not to exceed 10 days, provided the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified immediately after the emergency develops, and also upon the resumption of normal operating power.

§ 3.268 *Modulation.* The percentage of modulation of FM broadcast stations shall be maintained as high as possible consistent with good quality of transmission and good broadcast practice and in no case less than 85 percent nor more than 100 percent on peaks of frequent recurrence during any selection which normally is transmitted at the highest level of the program under consideration.

§ 3.269 *Frequency tolerance.* The center frequency of each FM broadcast station shall be maintained within 2000 cycles of the assigned center frequency.

§ 3.270 *Antenna structure, marking and lighting.* Where an antenna structure(s) is required to be painted or lighted see § 17.29, *Inspection of tower lights and associated control equipment;* § 17.39, *Cleaning and repainting;* § 17.40 *Time when lights shall be exhibited;* § 17.41 *Spare lamps;* and § 17.42, *Lighting equipment;* of Part 17 of this chapter (Construction, Marking and Lighting of Antenna Structures).

§ 3.271 *Discontinuance of operation.* The licensee of each station shall notify the Commission in Washington, D. C., and the Engineer in Charge of the radio district where such station is located of permanent discontinuance of operation at least two days before operation is discontinued. The licensee shall, in addition, immediately forward the station license and other instruments of authorization to the Washington, D. C., office of the Commission for cancellation.

§ 3.272 *Field intensity measurements.* The Commission may require field intensity measurements in connection with applications and in other cases where such measurements are found to be necessary. For example, any application which asserts that interference predicted under the Standards of Good Engineering Practice would not be realized may require supplementary data including appropriate field intensity measurements. Furthermore, in order that FM broadcast station coverage data may be accumulated it is desirable that existing FM broadcast stations make such measurements where feasible and file the data with the Commission.

§ 3.273 *Emergency antenna.* In the event it becomes impossible to operate with the regularly authorized antenna, the station may, without further authority, be operated with an emergency antenna for a period of 10 days or less pending necessary repairs: *Provided,* That the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified in writing immediately upon the beginning of such operation and upon the resumption of normal operation.

§ 3.274 *Remote control operation.* A station which is authorized with transmitter power output of 10 kilowatts or less may, upon prior authorization from the Commission, be operated by remote control at the point(s) which shall be specified in the station license. An application for authorization to operate by remote control may be made as a part of an application for construction permit or license or modification thereof by specifying the proposed remote control point(s). Operation by remote control shall be subject to the following conditions:

(a) The equipment at the operating and transmitting positions shall be so installed and protected that it is not accessible to or capable of operation by persons other than those duly authorized by the licensee.

(b) The control circuits from the operating position to the transmitter shall provide positive on and off control and shall be such that open circuits, short circuits, grounds or other line faults will not actuate the transmitter and any fault causing loss of such control will automatically place the transmitter in an inoperative condition.

(c) Control and monitoring equipment shall be installed so as to allow the licensed operator either at the remote control point or at the transmitter to perform all of the functions in a manner required by the Commission's rules and Standards.

OTHER RULES RELATING TO OPERATION

§ 3.281 *Logs.* The licensee or permittee of each FM broadcast station shall maintain separate program and operating logs for such station: *Provided, however,* If the same licensee or permittee operates an FM broadcast station and a standard broadcast station and simultaneously broadcasts the same programs over the facilities of both such stations, one program log may be maintained for both stations for such periods as both stations simultaneously broadcast the same programs. Such licensee or permittee shall require entries to be made as follows:

(a) In the program log:

(1) An entry of the time each station identification announcement (call letters and location) is made.

(2) An entry briefly describing each program broadcast, such as "music," "drama," "speech," etc., together with the name or title thereof and the sponsor's name, with the time of the beginning and ending of the complete program. If a mechanical record is used, the entry shall show the exact nature thereof, such as "record," "transcription," etc., and the time it is announced as a mechanical reproduction. If a speech is made by a political candidate, the name and political affiliations of such speaker shall be entered.

(3) An entry showing that each sponsored program broadcast has been announced as sponsored, paid for, or furnished by the sponsor.

(4) An entry showing, for each program of network origin, the name of the network originating the program.

(b) In the operating log:

(1) An entry of the time the station begins to supply power to the antenna, and the time is stops.

(2) An entry of the time the program begins and ends.

(3) An entry of each interruption to the carrier wave, its cause, and duration.

(4) An entry of the following each 30 minutes:

(i) Operating constants of last radio stage (total plate current and plate voltage).

(ii) RF transmission line meter reading.

(iii) Frequency monitor reading.

(5) Log of experimental operation during experimental period (if regular operation is maintained during this period, the above logs shall be kept).

(i) A log must be kept of all operation during the experimental period. If the entries required above are not applicable thereto, then the entries shall be made so as to fully describe the operation.

(c) Where an antenna structure(s) is required to be illuminated see § 17.38, *Recording of tower light inspections in the station record,* of Part 17 of this chapter, (Construction, Marking and Lighting of Antenna Structures).

§ 3.282 *Logs; retention of.* Logs of FM broadcast stations shall be retained by the licensee or permittee for a period of two years: *Provided, however,* That logs involving communications incident to a disaster or which include communications incident to or involved in an investigation by the Commission and concerning which the licensee or permittee has been notified, shall be retained by the licensee or permittee until he is specifically authorized in writing by the Commission to destroy them: *Provided, further,* That logs incident to or involved in any claim or complaint of which the licensee or permittee has notice shall be retained by the licensee or permittee until such claim or complaint has been fully satisfied or until the same has been barred by statute limiting the time for the filing of suits upon such claims.

§ 3.283 *Logs; by whom kept.* Each log shall be kept by the person or persons competent to do so, having actual knowledge of the facts required, who shall sign the log when starting duty and again when going off duty. The logs shall be made available upon request by an authorized representative of the Commission.

§ 3.284 *Log form.* The log shall be kept in an orderly manner, in suitable form, and in such detail that the data required for the particular class of station concerned are readily available. Key letters or abbreviations may be used if proper meaning or explanation is contained elsewhere in the log.

§ 3.285 *Correction of logs.* No log or portion thereof shall be erased, obliterated, or willfully destroyed within the period of retention provided by the rules. Any necessary correction may be made only by the person originating the entry who shall strike out the erroneous portion, initial the correction made, and indicate the date of correction.

§ 3.286 *Rough logs.* Rough logs may be transcribed into condensed form, but in such case the original log or memoranda and all portions thereof shall be preserved and made a part of the complete log.

§ 3.287 *Station identification.* (a) A licensee of an FM broadcast station shall make separate station identification announcement (call letters and location) for such station: *Provided, however,* That, if the same licensee operates an FM broadcast station and a standard broadcast station and simultaneously broadcasts the same programs over the facilities of both such stations, station identification announcements may be made jointly for both stations for periods of such simultaneous operation. If the call letters of the FM station do not clearly reveal that it is an FM station, the joint announcement shall state that one of the stations is an FM station. Station identification announcement shall be made at the beginning and ending of each time of operation and during operation (1) on the hour and (2) either on the half hour or at the quarter hour following the hour and at the quarter hour preceding the next hour: *Provided,*

(b) Such identification announcement need not be made on the hour when to make such announcement would interrupt a single consecutive speech, play, religious service, symphony concert, or operatic production of longer duration than 30 minutes. In such cases the identification announcement shall be made at the beginning of the program, at the first interruption of the entertainment continuity, and at the conclusion of the program.

(c) Such identification announcement need not be made on the half hour or quarter hours when to make such announcement would interrupt a single consecutive speech, play, religious service, symphony concert, or operatic production. In such cases an identification announcement shall be made at the first interruption of the entertainment continuity and at the conclusion of the program: *Provided,* That an announcement within 5 minutes of the times specified in paragraph (a) (2) of this section will satisfy the requirements of identification announcements.

(d) In the case of variety show programs, baseball game programs or similar programs of longer duration than 30 minutes, the identification announcement shall be made within 5 minutes of the hour and of the times specified in paragraph (a) (2) of this section.

(e) In the case of all other programs, the identification announcement shall be made within 2 minutes of the hour and of the times specified in paragraph (a) (2) of this section.

(f) In making the identification announcement the call letters shall be given only on the channel of the station identified thereby except as otherwise provided herein.

§ 3.288 *Mechanical records.* Each program broadcast which consists in whole or in part of one or more mechanical reproductions shall be announced in the manner and to the extent set out below.

(a) Each such program of longer duration than 30 minutes, consisting in whole or in part of one or more mechanical reproductions, shall be identified by appropriate announcement at the beginning of the program, at each 30-minute interval and at the conclusion of the program: *Provided, however,* That the identifying announcement at each 30-minute interval is not required in case of a mechanical reproduction consisting of a continuous uninterrupted speech, play, religious service, symphony concert, or operatic production of longer than 30 minutes.

(b) Each such program of a longer duration than 5 minutes and not in excess of 30 minutes, consisting in whole or in part of one or more mechanical reproductions, shall be identified by an appropriate announcement at the beginning and end of the program.

(c) Each such program of duration of 5 minutes or less, consisting in whole or in part of mechanical reproductions, shall be identified by appropriate announcement immediately preceding the use thereof: *Provided, however,* That each such program of one minute or less need not be announced as such.

(d) In case a mechanical reproduction is used for background music, sound effects, station identification, program identification (theme music of short duration) or identification of the sponsorship of the program proper, no announcement of the mechanical reproduction is required.

(e) The exact form of identifying announcement is not prescribed, but the language shall be clear and in terms commonly used and understood. A licensee shall not attempt affirmatively to create the impression that any program being broadcast by mechanical reproduction consists of live talent.

§ 3.289 *Sponsored programs; announcement of.* (a) In the case of each program for the broadcasting of which money, services, or other valuable consideration is either directly or indirectly paid or promised to, or charged or received by, any radio broadcast station, the station broadcasting such program shall make, or cause to be made, an appropriate announcement that the program is sponsored, paid for, or furnished, either in whole or in part.

(b) In the case of any political program or any program involving the discussion of public controversial issues for which any records, transcriptions, talent, scripts, or other material or services of any kind are furnished, either directly or indirectly, to a station as an inducement to the broadcasting of such program, an announcement shall be made both at the beginning and conclusion of such program on which such material or services are used that such records, transcriptions, talent, scripts, or other material or services have been furnished to such station in connection with the broadcasting of such program: *Provided, however,* That only one such announcement need be made in the case of any such program of 5 minutes' duration or less, which announcement may be made either at the beginning or conclusion of the program.

(c) The announcement required by this section shall fully and fairly disclose the true identity of the person or persons by whom or in whose behalf such payment is made or promised, or from whom or in whose behalf such services or other valuable consideration is received, or by whom the material or services referred to in paragraph (b) hereof are furnished. Where an agent or other person contracts or otherwise makes arrangements with a station on behalf of another, and such fact is known to the station, the announcement shall disclose the identity of the person or persons in whose behalf such agent is acting instead of the name of such agent.

(d) In the case of any program, other than a program advertising commercial products or services, which is sponsored, paid for, or furnished, either in whole or in part, or for which material or services referred to in paragraph (b) of this section are furnished, by a corporation, committee, association or other unincorporated group, the announcement required by this section, shall disclose the name of such corporation, committee, association or other unincorporated group. In each such case the station shall require that a list of the chief executive officers or members of the executive committee or of the board of directors of the corporation, committee, association or other unincorporated group shall be made available for public inspection at one of the radio stations carrying the program.

(e) In the case of programs advertising commercial products or services, an announcement stating the sponsor's corporate or trade name or the name of the sponsor's product, shall be deemed sufficient for the purposes of this section and only one such announcement need be made at any time during the course of the program.

§ 3.290 *Broadcasts by candidates for public office*—(a) *Definitions.* A "legally qualified candidate" means any person who has publicly announced that he is a candidate for nomination by a convention of a political party or for nomination or election in a primary, special, or general election, municipal, county, state or national, and who meets the qualifications prescribed by the applicable laws to hold the office for which he is a candidate, so that he may be voted for by the electorate directly or by means of delegates or electors, and who—

(1) Has qualified for a place on the ballot or

(2) Is eligible under the applicable law to be voted for by sticker, by writing in his name on the ballot, or other method, and (i) has been duly nominated by a political party which is commonly known and regarded as such, or (ii) makes a substantial showing that he is a bona fide candidate for nomination or office, as the case may be.

(b) *General requirements.* No station licensee is required to permit the use of its facilities by any legally qualified candidate for public office, but if any licensee shall permit any such candidate to use its facilities, it shall afford equal opportunities to all other such candidates for that office to use such facilities: *Provided,* That such licensee shall have no power of censorship over the material broadcast by any such candidate.

(c) *Rates and practices.* The rates, if any, charged all such candidates for the same office shall be uniform and shall not be rebated by any means, directly or indirectly; no licensee shall make any discrimination in charges, practices, regulations, facilities, or services for or in connection with the service rendered pursuant to the regulations in this part, or make or give any preference to any candidate for public office or subject any such candidate to any prejudice or disadvantage; nor shall any licensee make any contract or other agreement which shall have the effect of permitting any legally qualified candidate for any public office to broadcast to the exclusion of other legally qualified candidates for the same public office.

(d) *Inspection of records.* Every licensee shall keep and permit public inspection of a complete record of all requests for broadcast time made by or on behalf of candidates for public office, together with an appropriate notation showing the disposition made by the licensee of such requests, and the charges made, if any, if request is granted.

§ 3.291 *Rebroadcast.* (a) The term "rebroadcast" means reception by radio of the program [16] of a radio station, and the simultaneous or subsequent retransmission of such program by a broadcast station.[17]

(b) The licensee of an FM broadcast station may, without further authority of the Commission, rebroadcast the program of a United States standard, FM or noncommercial educational broadcast station, provided the Commission is notified of the call letters of each station rebroadcast and the licensee certifies that express authority has been received from the licensee of the station originating the program.[18]

(c) (1) The licensee of an FM broadcast station located within a State or the District of Columbia may, without further authority of the Commission, rebroadcast on a noncommercial basis a noncommercial program of a United States international broadcast station.

(2) The licensee of an FM broadcast station located in any territory or insular possession of the United States may, without further authority of the Commission, rebroadcast any program of a United States international broadcast station.

(3) In the case of any rebroadcast under the provisions of this paragraph, the Commission shall be notified of the call

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[16] As used in this section, program includes any complete program or part thereof.

[17] In case a program is transmitted from its point of origin to a broadcast station entirely by telephone facilities in which a section of such transmission is by radio, the broadcasting of this program is not considered a rebroadcast.

[18] The notice and certification of consent shall be given within 3 days of any single rebroadcast, but in case of the regular practice of rebroadcasting certain programs of a standard or FM broadcast station several times during a license period, notice and certification of consent shall be given for the ensuing license period with the application for renewal of license, or at the beginning of such rebroadcast practice if begun during a license period.

letters of each station whose program is rebroadcast and the licensee shall certify that express authority has been received from the licensee of the station originating the program.

(d) No licensee of an FM broadcast station shall rebroadcast the program of any United States radio station not designated in paragraph (b) or (c) of this section without written authority having first been obtained from the Commission upon application (informal) accompanied by written consent or certification of consent of the licensee of the station originating the program.[19]

§ 3.292 *Lotteries and give-away programs.*[20] (a) An application for construction permit, license, renewal of license, or any other authorization for the operation of a broadcast station, will not be granted where the applicant proposes to follow or continue to follow a policy or practice of broadcasting or permitting "the broadcasting of any advertisement of or information concerning any lottery, gift enterprise, or similar scheme, offering prizes dependent in whole or in part upon lot or chance, or any list of the prizes drawn or awarded by means of any such lottery, gift enterprise, or scheme, whether said list contains any part of all of such prizes." (See 18 U. S. C. sec. 1304.)

(b) The determination whether a particular program comes within the provisions of paragraph (a) of this section depends on the facts of each case. However, the Commission will in any event consider that a program comes within the provisions of paragraph (a) of this section if in connection with such program a prize consisting of money or thing of value is awarded to any person whose selection is dependent in whole or in part upon lot or chance, if as a condition of winning or competing for such prize:

(1) Such winner or winners are required to furnish any money or thing of value or are required to have in their possession any product sold, manufactured, furnished or distributed by a sponsor of a program broadcast on the station in question; or

(2) Such winner or winners are required to be listening to or viewing the program in question on a radio or television receiver; or

(3) Such winner or winners are required to answer correctly a question, the answer to which is given on a program broadcast over the station in question or where aid to answering the question correctly is given on a program broadcast over the station in question. For the purposes of this provision the broadcasting of the question to be answered over the radio station on a previous program will be considered as an aid in answering the question correctly; or

(4) Such winner or winners are required to answer the phone in a prescribed manner or with a prescribed phrase, or are required to write a letter in a prescribed manner or containing a prescribed phrase, if the prescribed manner of answering the phone or writing the letter or the prescribed phrase to be used over the phone or in the letter (or an aid in ascertaining the prescribed phrase or the prescribed manner of answering the phone or writing the letter) is, or has been, broadcast over the station in question.

APPENDIX TO SUBPART B—STANDARDS OF GOOD ENGINEERING PRACTICE CONCERNING FM BROADCAST STATIONS

Introduction. There are presented herein the Commission's engineering standards relating to the allocation and operation of FM broadcast stations. These standards also apply to noncommercial educational FM broadcast stations, except as noted herein. The Commission's rules and regulations contain references to these standards, which have been approved by the Commission and thus are considered as reflecting its opinion in all matters involved.

The standards set forth herein are those deemed necessary for the construction and operation of FM broadcast stations to meet the requirements of technical regulations and for operation in the public interest along technical lines not otherwise enunciated. These standards are based upon the best engineering data available; including evidence at hearings, conferences with radio engineers, and data supplied by manufacturers of radio equipment and by licensees of FM broadcast stations. These standards are complete in themselves and supersede previous engineering standards or policies of the Commission concerning FM broadcast stations. While these standards provide for flexibility and indicate the conditions under which they are applicable, it is not expected that material deviation from the fundamental principles will be recognized unless full information is submitted as to the need and reasons therefor.

These standards will necessarily be revised from time to time as progress is made in the art. The Commission will accumulate and analyze engineering data available as to the progress of the art so that these standards may be kept current with technical developments.

TABLE OF CONTENTS

Sec.
1. Definitions.
2. Engineering standards of allocation.
3. Topographical data.
4. Interference standards.
5. Field intensity measurements in allocation.
6. Transmitter location.
7. Antenna systems.
8. Transmitters and associated equipment.
9. Indicating instruments pursuant to § 3.258.
10. Auxiliary transmitters.
11. (Reserved.)
12. Frequency and modulation monitors at auxiliary transmitters.
13. Requirements for type approval of transmitters.
14. Requirements for type approval of frequency monitors.
15. Requirements for type approval of modulation monitors.
16. Approved transmitters.
17. Approved frequency monitors.
18. Approved modulation monitors.

STANDARDS OF GOOD ENGINEERING PRACTICE CONCERNING FM BROADCAST STATIONS

SECTION 1. DEFINITIONS

A. *FM broadcast station.* The term "FM broadcast station" means a station employing frequency modulation in the FM broadcast band and licensed primarily for the transmission of radiotelephone emissions intended to be received by the general public.

B. *Frequency modulation.* The term "frequency modulation" means a system of modulation where the instantaneous radio frequency varies in proportion to the instantaneous amplitude of the modulating signal (amplitude of modulating signal to be measured after pre-emphasis, if used) and the instantaneous radio frequency is independent of the frequency of the modulating signal.

C. *FM broadcast band.* The term "FM broadcast band" means the band of frequencies extending from 88 to 108 megacycles, which includes those assigned to noncommercial educational broadcasting.

D. *Center frequency.* The term "center frequency" means:

(1) The average frequency of the emitted wave when modulated by a sinusoidal signal.

(2) The frequency of the emitted wave without modulation.

E. *Frequency swing.* The term "frequency swing" means the instantaneous departure of the frequency of the emitted wave from the center frequency resulting from modulation.

F. *FM broadcast channel.* The term "FM broadcast channel" means a band of frequencies 200 kilocycles wide and is designated by its center frequency. Channels for FM broadcast stations begin at 88.1 megacycles and continue in successive steps of 200 kilocycles to and including 107.9 megacycles.

G. *Antenna field gain.* The term "antenna field gain" of an FM broadcast antenna means the ratio of the effective free space field intensity produced at one mile in the horizontal plane expressed in millivolts per meter for 1 kilowatt antenna input power to 137.6 mv/m.

H. *Free space field intensity.* The term "free space field intensity" means the field intensity that would exist at a point in the absence of waves reflected from the earth or other reflecting objects.

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[19] The broadcasting of a program relayed by a remote pickup broadcast station or an ST broadcast station is not considered a rebroadcast.

By Order No. 82, dated and effective June 24, 1941, until further order of the Commission, § 3.291 (d) is suspended only insofar as it requires prior written authority of the Commission for the rebroadcasting of programs originated for that express purpose by United States Government radio stations.

[20] NOTE: Order of Sept. 21, 1949, 14 F. R. 5999, Oct. 1, 1949, provides that the effective date of § 3.292 be postponed until a date to be fixed by further order, which shall be at least thirty days after a final decision by the Supreme Court of the United States, or thirty days after the time within which an appeal to the Supreme Court may be taken has expired without such an appeal being taken, in pending litigation with respect to this section.

I. *Multiplex transmission.* The term "multiplex transmission" means the simultaneous transmission of two or more signals within a single channel. Multiplex transmission as applied to FM broadcast stations means the transmission of facsimile or other signals in addition to the regular broadcast signals.

J. *Percentage modulation.* The term "percentage modulation" as applied to frequency modulation means the ratio of the actual frequency swing to the frequency swing defined as 100 percent modulation, expressed in percentage. For FM broadcast stations a frequency swing of ±75 kilocycles is defined as 100 percent modulation.

K. *Effective radiated power.* The term "effective radiated power" means the product of the antenna power (transmitter output power less transmission line loss) times (1) the antenna power gain, or (2) the antenna field gain squared. Where circular or elliptical polarization is employed the term effective radiated power is applied separately to the horizontal and vertical components of radiation. For allocation purposes, the effective radiated power authorized is the horizontally polarized component of radiation only.

L. *Service area.* The term "service area" as applied to FM broadcasting means the service resulting from an assigned effective radiated power and antenna height above average terrain.

M. *Antenna height above average terrain.* (1) The term "antenna height above average terrain" means the height of the radiation center of the antenna above the terrain 2 to 10 miles from the antenna. (In general a different antenna height will be determined for each direction from the antenna. The average of these various heights is considered as the antenna height above average terrain.)

(2) Where circular or elliptical polarization is employed the antenna height above average terrain shall be based upon the height of the radiation center of the antenna which transmits the horizontal component of radiation.

N. *Field intensity.* The term "field intensity" as used in these standards shall mean the electric field intensity in the horizontal direction.

O. *Index of cooperation.* The index of cooperation as applied to facsimile broadcasting is the product of the number of lines per inch, the available line length in inches, and the reciprocal of the line-use ratio (e. g., 105×8.2×8/7=984).

P. *Line-use ratio.* The term "line-use ratio" as applied to facsimile broadcasting is the ratio of the available line to the total length of scanning line.

Q. *Available line.* The term "available line" means the portion of the total length of scanning line that can be used specifically for picture signals.

R. *Rectilinear scanning.* The term "rectilinear scanning" means the process of scanning an area in a predetermined sequence of narrow straight parallel strips.

S. *Optical density.* The term "optical density" means the logarithm (to the base 10) of the ratio of incident to transmitted or reflected light.

SECTION 2. ENGINEERING STANDARDS OF ALLOCATION

A. Sections 3.202 to 3.206 inclusive of the Rules and Regulations describe the basis for allocation of FM broadcast stations, including the division of the United States into Areas I and II.

B. FM broadcast stations shall determine the extent of their 1 mv/m and 50 uv/m contours in accordance with the methods prescribed in these Standards.

C. Although some service is provided by tropospheric waves, the service area is considered to be only that served by the ground wave. The extent of service is determined by the point at which the ground wave is no longer of sufficient intensity to provide satisfactory broadcast service. The field intensity considered necessary for service is as follows:

TABLE I

Area:	Median field intensity
City business or factory areas	1 mv/m
Rural areas	50 uv/m

A median field intensity of 3 to 5 mv/m should be placed over the principal city to be served and for class B stations, a median field intensity of 1 mv/m should be placed over the business district of cities of 10,000 or greater within the metropolitan district served. A field intensity of 5 mv/m should be provided over the main studio of a class B station except as otherwise provided in § 3.205 of the Rules. These figures are based upon the usual noise levels encountered in the several areas and upon the absence of interference from other FM stations.

D. A basis for allocation of satellite stations has not yet been determined. For the present, applications will be considered on their individual merits.

E. The service area is predicted as follows: Profile graphs must be drawn for at least eight radials from the proposed antenna site. These profiles should be prepared for each radial beginning at the antenna site and extending to 10 miles therefrom. Normally the radials are drawn for each 45° of azimuth; however, where feasible the radials should be drawn for angles along which roads tend to follow. (The latter method may be helpful in obtaining topographical data where otherwise unavailable, and is particularly useful in connection with mobile field intensity measurements of the station and the correlation of such measurements with predicted field intensities.) In each case one or more radials must include the principal city or cities to be served, particularly in cases of rugged terrain, even though the city may be more than 10 miles from the antenna site. The profile graph for each radial should be plotted by contour intervals of from 40 to 100 feet and, where the data permits, at least 50 points of elevation (generally uniformly spaced) should be used for each radial. In instances of very rugged terrain where the use of contour intervals of 100 feet would result in several points in a short distance, 200- or 400-foot contour intervals may be used for such distances. On the other hand, where the terrain is uniform or gently sloping the smallest contour interval indicated on the topographic map (see below) should be used, although only a relatively few points may be available. The profile graph should accurately indicate the topography for each radial, and the graphs should be plotted with the distance in miles as the abscissa and the elevation in feet above mean sea level as the ordinate. The profile graphs should indicate the source of the topographical data employed. The graph should also show the elevation of the center of the radiating system. The graph may be plotted either on rectangular coordinate paper or on special paper which shows the curvature of the earth. It is not necessary to take the curvature of the earth into consideration in this procedure, as this factor is taken care of in the chart showing signal intensities (Fig. 1).

F. The average elevation of the 8-mile distance between 2 and 10 miles from the antenna site should then be determined from the profile graph for each radial. This may be obtained by averaging a large number of equally spaced points, by using a planimeter, or by obtaining the median elevation (that exceeded for 50 percent of the distance) in sectors and averaging these values.

G. To determine the distance to a particular contour, Figure 1 concerning the range of FM broadcast stations should be used. This chart has been prepared for a frequency in the center of the band and is to be used for all FM broadcast channels, since little change results over this frequency range. The distance to a contour is determined by the effective radiated power and the antenna height. The height of the antenna used in connection with Figure 1 should be the height of the center of the proposed antenna radiator above the average elevation obtained by the preceding method. The distances shown by Figure 1 are based upon an effective radiated power of 1 kilowatt; to use the chart for other powers, the sliding scale associated with the chart should be trimmed and used as the ordinate scale. This sliding scale is placed on the chart with the appropriate graduation for power in line with the lower line of the top edge of the chart. The right edge of the scale is placed in line with the appropriate antenna height graduations and the chart then becomes direct reading for this power and antenna height. Where the antenna height is not one of those for which a scale is provided, the signal strength or distance is determined by interpolation between the curves connecting the equidistant points.

H. The foregoing process of determining the extent of the required contours shall be followed in determining the boundary of the proposed service area. The areas within the required contours must be determined and submitted with each application for an FM broadcast station. Each application shall include a map showing these contours, and for this purpose sectional aeronautical charts or other maps having a convenient scale may be used. The map shall show the radials along which the profile charts and expected field strengths have been determined. The area within each contour should then be measured (by planimeter or other approximate means) to determine the number of square miles therein. In computing the area within the contours, exclude (1) areas beyond the borders of the United States, and (2) large bodies of water, such as ocean areas, gulfs, sounds, bays, large lakes, etc., but not rivers.

I. In cases where the terrain in one or more directions from the antenna site departs widely from the average elevation of the 2 to 10 mile sector, the application of this prediction method may indicate contour distances that are different from those which may be expected in practice. In such cases the prediction method should be followed, but a showing may be made if desired concerning the distance to the contour as determined by other means. Such showing should include data concerning the procedure employed and sample calculations. For example, a mountain ridge may indicate the practical limit of service although the prediction method may indicate the contour elsewhere. In cases of such limitation, the map of predicted coverage should show both the regular predicted area and the area as limited or extended by terrain. Both areas should be measured as previously described; the area obtained by the regular prediction method should be given in the application form, with a supplementary note giving the limited or extended area. In special cases the Commission may require additional information as to the terrain in the proposed service area.

J. In determining the population served by FM broadcast stations, it is considered that the built-up city areas and business districts in cities having over 10,000 population and located beyond the 1 mv/m contour do not receive adequate service. Minor civil division maps (1950 census) should be used in making population counts, excluding cities not receiving adequate service. Where a contour divides a minor division, uniform distribution of population within the division should be assumed in order to determine the population included within the contour unless a more accurate count is available.

SECTION 3. TOPOGRAPHICAL DATA

A. In the preparation of the profile graphs previously described, and in determining the location and height above mean sea level of the antenna site, the elevation or contour intervals shall be taken from United States Geological Survey Topographic Quadrangle Maps, United States Army Corps of Engineers Maps or Tennessee Valley Authority maps, whichever is the latest, for all areas for which such maps are available. If such maps are not published for the area in question, the next best topographic information should be used. Topographic data may sometimes be obtained from state and municipal agencies. The data from the Sectional Aeronautical Charts (including bench marks), or railroad depot elevations and highway elevations from road maps, may be used where no better information is available. In cases where limited topographic data can be obtained, use may be made of an altimeter in a car driven along roads extending generally radially from the transmitter site.

B. The Commission will not ordinarily require the submission of topographical maps for areas beyond 15 miles from the antenna site, but the maps must include the principal city or cities to be served. If it appears necessary, additional data may be requested.

C. The United States Geological Survey Topography Quadrangle Sheets may be obtained from the United States Geological Survey Department of the Interior, Washington, D. C., for 20 cents each. The Sectional Aeronautical Charts are available from the United States Coast and Geodetic Survey, Department of Commerce, Washington, D. C., for 25 cents each. These maps may also be secured from branch offices and from authorized agents or dealers in most principal cities.

SECTION 4. INTERFERENCE STANDARDS

A. Field intensity measurements are preferable in predicting interference between FM broadcast stations and should be used, when available, in determining the extent of interference. (For methods and procedure, see Section 5.) In lieu of measurements, the interference should be predicted in accordance with the method described herein.

B. Objectionable interference is considered to exist when the interfering signal exceeds that given by the ratios of Table II. In Table II the desired signal is median field and the undesired signal is the tropospheric signal intensity exceeded for 1 percent of the time.

TABLE II

Channel separation:	*Ratio of desired to undesired signals*
Same channel	10:1.
200 kc	2:1.
400 kc	1:10.
600 kc	1:100.
800 kc and above	No restriction.[1]

[1] Intermediate frequency amplifiers of most FM broadcast receivers are designed to operate on 10.7 megacycles. For this reason the assignment of two stations in the same area, one with a frequency 10.6 or 10.8 megacycles removed from that of the other, should be avoided if possible.

C. Stations normally will not be authorized to operate in the same city or in nearby cities with a frequency separation of less than 800 kc.: *Provided*, That stations may be authorized to operate in nearby cities with a frequency separation of not less than 400 kc. where necessary in order to provide an equitable and efficient distribution of facilities: *And provided further*, That class B stations will not be authorized in the same metropolitan district with a frequency separation of less than 800 kc. In the assignment of FM broadcast facilities the Commission will endeavor to provide the optimum use of the channels in the band, and accordingly may assign a channel different from that requested in an application.

D. In predicting the extent of interference within the ground wave service area of a station, the tropospheric signal intensity (from co-channel and adjacent channel stations) existing for 1 percent of the time shall be employed. The 1 percent values for 1 kilowatt of power and various antenna heights are given in Figure 2, and values for other powers may be obtained by use of the sliding scale as for Figure 1. The values indicated by Figure 2 are based upon available data, and are subject to change as additional information concerning tropospheric wave propagation is obtained.[1]

E. In determining the points at which the interference ratio is equal to the values shown in Table II, the field intensities for the two interfering signals under consideration should be computed for a considerable number of points along the line between the two stations. Using this data, field intensity versus distance curves should be plotted (e. g., cross-curves on graph paper) in order to determine the points on this path where the interference ratios exist. The points established by this method together with the points along the contours where the same ratios are determined, are considered to be generally sufficient to predict the area of interference. Additional points may be required in the case of irregular terrain or the use of directional antenna systems.

F. The area of interference, if any, shall be shown in connection with the map of predicted coverage required by the application form, together with the basic data employed in computing such interference. The map shall show the interference within the 50 uv/m contour.

SECTION 5. FIELD INTENSITY MEASUREMENTS IN ALLOCATION

A. When field intensity measurements are required by the Commission's rules or when employed in determining the extent of service or interference of existing stations, such measurements should be made in accordance with the procedure outlined herein.

B. Measurements made to determine the service and interference areas of FM broadcast stations should be made with mobile equipment along roads which are as close and similar as possible to the radials showing topography which were submitted with the application for construction permit. Suitable measuring equipment and a continuous recording device must be employed, the chart of which is either directly driven from the speedometer of the automobile in which the equipment is mounted or so arranged that distances and identifying landmarks may be readily noted. The measuring equipment must be calibrated against recognized standards of field intensity and so constructed that it will maintain an acceptable accuracy of measurement while in motion or when stationary. The equipment should be so operated that the recorder chart can be calibrated directly in field intensity in order to facilitate analysis of the chart. The receiving antenna shall be primarily responsive to the horizontal electric field and should be nondirectional unless otherwise authorized. Authorization to use a half-wave dipole may be requested by filing application with the Commission prior to the making of measurements. The application may be filed by letter describing the proposed antenna, the method of installation and operation, and calibration procedures. Such authorization will remain in effect throughout the series of measurements for which granted.

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[1] Fig. 2 will be available at some future date when sufficient measurements of tropospheric signals are available. Until that time, interference should be predicted on the basis of the ground wave chart (Fig. 1).

C. Mobile measurements should be made with a minimum chart speed of 3 inches per mile and preferably 5 or 6 inches per mile. Locations shall be noted on the recorder chart as frequently as necessary to definitely fix the relation between the measured field intensity and the location. The time constant of the equipment should be such to permit adequate analysis of the charts, and the time constant employed shall be shown. Measurements should be made to a point on each radial well beyond the particular contour under investigation. The transmitter power shall be maintained as close as possible to the authorized power throughout the survey.

D. After the measurements are completed, the recorder chart shall be divided into not less than 15 sections on each equivalent radial from the station. The field intensity in each section of the chart shall be analyzed to determine the field intensity received 50 percent of the distance (median field) throughout the section, and this median field intensity associated with the corresponding sector of the radial. The field intensity figures must be corrected for a receiving antenna elevation of 30 feet and for any directional effects of the automobile not otherwise compensated. This data should be plotted for each radial, using log-log coordinate paper with distance as the abscissa and field intensity as the ordinate. A smooth curve should be drawn through these points (of median fields for all sectors), and this curve used to determine the distance to the desired contour. The distances obtained for each radial may then be plotted on the map of predicted coverage or on polar coordinate paper (excluding water areas, etc.) to determine the service and interference areas of a station.

E. In making measurements to establish the field intensity contours of a station, mobile recordings should be made along each of the radials drawn in Section 2E above. Measurements should extend from the vicinity of the station out to the 1 mv/m measured contour and somewhat beyond (at the present time it is not considered practical to conduct mobile measurements far beyond this contour due to the fading ratio at weak fields which complicates analysis of the charts). These measurements would be made for the purpose of determining the variation of the measured contours from those predicted, and it is expected that initially the correlation of the measured 1 mv/m with the predicted 1 mv/m contour will be used as a basis in determining adherence to authorized service areas within the 50 uv/m contour.

F. In addition to the 1 mv/m contour, the map of measured coverage shall show the 50 uv/m contour as determined by employing Figure 1 and the distance to the 1 mv/m contour along each radial. The sliding scale shall be placed on the figure at the appropriate antenna height for the radial in question and then moved so the distance to the 1 mv/m contour (as measured) and the 1 mv/m mark are opposite. The distance to the 50 uv/m contour is then given opposite the 50 uv/m mark on the scale.

G. In predicting tropospheric interference on the basis of the above measurements, such measurements shall be carried out in the manner indicated above to determine the 1 mv/m contour. Using Figure 1 and its associated sliding scale, the equivalent radiated power shall be determined by placing the sliding scale on the chart (using the appropriate antenna height) and moving the scale until the distance to the 1 mv/m contour (as determined above), and the 1 mv/m mark are opposite. The equivalent radiated power is then read from the sliding scale where it crosses the lower line of the top edge of the chart. Changing to Figure 2 and using the equivalent radiated power just determined, the distance to the interfering contour under investigation is read in the usual manner.

H. In certain cases the Commission may desire more information or recordings and in these instances special instructions will be issued. This may include fixed location measurements to determine tropospheric propagation and fading ratios.

I. Complete data taken in conjunction with field intensity measurements shall be submitted to the Commission in affidavit form, including the following:

(a) Map or maps showing the roads or points where measurements were made, the service and/or interference areas determined by the prediction method and by the measurements, and any unusual terrain characteristics existing in these areas. (This map may preferably be of a type showing topography in the area.)

(b) If a directional transmitting antenna is employed, a diagram on polar coordinate paper showing the predicted free space field intensity in millivolts per meter at one mile in all directions. (See Section 7.)

(c) A full description of the procedures and methods employed including the type of equipment, the method of installation and operation, and calibration procedures.

(d) A representative sample of the recording tape, including calibration.

(e) Antenna system and power employed during the survey.

(f) Name, address, and qualifications of the engineer or engineers making the measurements.

J. All data shall be submitted to the Commission in triplicate.

SECTION 6. TRANSMITTER LOCATION

A. The transmitter location should be as near the center of the proposed service area as possible consistent with the applicant's ability to find a site with sufficient elevation to provide service throughout the area. Location of the antenna at a point of high elevation is necessary to reduce to a minimum the shadow effect on propagation due to hills and buildings which may reduce materially the intensity of the station's signals in a particular direction. The transmitting site should be selected consistent with the purpose of the station, i. e., whether it is intended to serve a small city, a metropolitan area, or a large region. Inasmuch as service may be provided by signals of 1 mv/m or greater field intensities in metropolitan areas, and inasmuch as signals as low as 20 uv/m may provide service in rural areas, considerable latitude in the geographical location of the transmitter is permitted; however, the necessity for a high elevation for the antenna may render this problem difficult. In general, the transmitting antenna of a station should be located at the most central point at the highest elevation available. In providing the best degree of service to an area, it is usually preferable to use a high antenna rather than a lower antenna with increased transmitter power. The location should be so chosen that line-of-sight can be obtained from the antenna over the principal city or cities to be served; in no event should there be a major obstruction in this path.

B. The transmitting location should be selected so that the 1 mv/m contour encompasses the urban population within the area to be served and the 50 uv/m or the interference free contour coincides generally with the limits of the area to be served. It is recognized that topography, shape of the desired service area, and population distribution may make the choice of a transmitter location difficult. In such cases consideration may be given to the use of a directional antenna system, although it is generally preferable to choose a site where a nondirectional antenna may be employed.

C. In cases of questionable antenna locations it is desirable to conduct propagation tests to indicate the field intensity expected in the principal city or cities to be served and in other areas, particularly where severe shadow problems may be expected. In considering applications proposing the use of such locations, the Commission may require site tests to be made. Such tests should be made in accordance with the measurement procedure previously described, and full data thereon must be supplied to the Commission. Test transmitters should employ an antenna having a height as close as possible to the proposed antenna height, using a balloon or other support if necessary and feasible. Information concerning the authorization of site tests may be obtained from the Commission upon request.

D. Present information is not sufficiently complete to establish "blanket areas" of FM broadcast stations, which are defined as those areas adjacent to the transmitters in which the reception of other stations is subject to interference due to the strong signal from the stations. Where it is found necessary to locate the transmitter in a residential area where blanketing problems may appear to be excessive, the application must include a showing concerning the availability of other sites. The authorization of station construction in areas where blanketing problems appear to be excessive will be on the basis that the applicant will assume full responsibility for the adjustment of reasonable complaints arising from excessively strong signals of the applicant's station. As a means of minimizing interference problems it is expected that stations adjacent in location will generally be assigned frequencies that are generally adjacent. Insofar as is feasible, frequency assignments for stations at separated locations will also be separated.

E. Cognizance must of course be taken regarding the possible hazard of the proposed antenna structure to aviation and the proximity of the proposed site to airports and airways. Procedures and standards with respect to the Commission's consideration of proposed antenna structures which will serve as a guide to persons intending to apply for radio station licenses are contained in Part 17 of the Commission rules (Rules Concerning the Construction, Marking and Lighting of Antenna Structures).

SECTION 7. ANTENNA SYSTEMS

A. It shall be standard to employ horizontal polarization; however, circular or elliptical polarization may be employed if desired. Clockwise or counterclockwise rotation may be used. The supplemental vertically polarized effective radiated power required for circular or elliptical polarization shall in no event exceed the effective radiated power authorized.

B. The antenna must be constructed so that it is as clear as possible of surrounding buildings or objects that would cause shadow problems.

C. Applications proposing the use of directional antenna systems must be accompanied by the following:

(1) Complete description of the proposed antenna system.

(2) Orientation of array with respect to true north; time phasing of fields from elements (degrees leading or lagging); space phasing of elements (in feet and in degrees); ratio of fields from elements.

(3) Calculated field intensity pattern (on letter-size polar coordinate paper) giving the free space field intensity in millivolts per meter at one mile in the horizontal plane, together with the formula used, constants employed, sample calculations and tabulation of calculation data.

(4) Name, address, and qualifications of the engineer making the calculations.

D. Applications proposing the use of FM broadcast antennas in the immediate vicinity (i. e., 200 feet or less) of (1) other FM broadcast antennas, or (2) television broadcast antennas for frequencies adjacent to the FM broadcast band, must include a showing as to the expected effect, if any, of such proximate operation.

E. In cases where it is proposed to use a tower of a standard broadcast station as a supporting structure for an FM broadcast antenna, an application for construction permit (or modification of construction permit) for such station must be filed for consideration with the FM application. Applications may be required for other classes of stations when their towers are to be used in connection with FM broadcast stations.

F. When an FM broadcast antenna is mounted on a nondirectional standard broadcast antenna, new resistance measurements must be made of the standard broadcast antenna after installation and testing of the FM broadcast antenna. During the installation and until the new resistance determination is approved, the standard broadcast station licensee should apply for authority (informal application) to operate by the indirect method of power determination. The FM broadcast license application will not be considered until the application form concerning resistance measurements is filed for the standard broadcast station.

G. When an FM broadcast antenna is mounted on an element of a standard broadcast directional antenna, a full engineering study concerning the effect of the FM broadcast antenna on the directional pattern must be filed with the application concerning the standard broadcast station. Depending upon the individual case, the Commission may require readjustment and certain field intensity measurements of the standard broadcast station following the completion of the FM broadcast antenna system.

H. When the proposed FM broadcast antenna is to be mounted on a tower in the vicinity of a standard broadcast directional array and it appears that the operation of the directional antenna system may be affected, an engineering study must be filed with the FM broadcast application concerning the effect of the FM broadcast antenna on the directional pattern. Readjustment and field intensity measurements of the standard broadcast station may be required following construction of the FM broadcast antenna.

I. Information regarding data required in connection with standard broadcast directional antenna systems may be found in the Standards of Good Engineering Practice Concerning Standard Broadcast Stations.

J. In the event a common tower is used by two or more licensees for antenna and/or antenna supporting purposes, the licensee who is owner of the tower shall assume full responsibility for the installation and maintenance of any painting or lighting requirements. In the event of shared ownership, one licensee shall assume such responsibility and advise the Commission accordingly.

K. It is recommended that an emergency FM broadcast antenna be installed, or, alternately, an auxiliary transmission line or lines if feasible in the particular circumstances. Data thereon should be supplied with the application for construction permit; if proposed after station construction, an informal application should be submitted to the Commission.

L. When necessary for the protection of air navigation, the antenna and supporting structure shall be painted and illuminated in accordance with the specifications supplied by the Commission pursuant to section 303 (q) of the Communications Act of 1934, as amended.

SECTION 8. TRANSMITTERS AND ASSOCIATED EQUIPMENT

A. *Electrical performance standards.* The general design of the FM broadcast transmitting system (from input terminals of microphone preamplifier, through audio facilities at the studio, through lines or other circuits between studio and transmitter, through audio facilities at the transmitter, and through the transmitter, but excluding equalizers for the correction of deficiencies in microphone response) shall be in accordance with the following principles and specifications:

(1) Standard power ratings and operating power range of FM broadcast transmitters shall be in accordance with the following table:

Standard power rating:	Operating power range
10 watts [1]	10 watts or less.
250 watts	250 watts or less.
1 kw	250 watts–1 kw.
3 kw	1–3 kw.
5 kw	1–5 kw.
10 kw	3–10 kw.
25 kw	10–25 kw.
50 kw	10–50 kw.
100 kw	50–100 kw.

[1] For noncommercial educational FM stations.

(a) Composite transmitters may be authorized with a power rating different from the above table, provided full data is supplied in the application concerning the basis employed in establishing the rating and the need therefor. The operating range of such transmitters shall be from one-third of the power rating to the power rating.

(b) The transmitter shall operate satisfactorily in the operating power range with a frequency swing of ±75 kilocycles, which is defined as 100 percent modulation.

(2) The transmitting system shall be capable of transmitting a band of frequencies from 50 to 15,000 cycles. Preemphasis shall be employed in accordance with the impedance-frequency characteristic of a series inductance-resistance network having a time constant of 75 microseconds. (See Fig. 3.) The deviation of the system response from the standard preemphasis curve shall lie between two limits as shown in Figure 3. The upper of these limits shall be uniform (no deviation) from 50 to 15,000 cycles. The lower limit shall be uniform from 100 to 7,500 cycles, and 3 db. below the upper limit; from 100 to 50 cycles the lower limit shall fall from the 3 db. limit at a uniform rate of 1 db. per octave (4 db. at 50 cycles); from 7,500 to 15,000 cycles the lower limit shall fall from the 3 db. limit at a uniform rate of 2 db. per octave (5 db. at 15,000 cycles).

(3) At any modulation frequency between 50 and 15,000 cycles and at modulation percentages of 25, 50, and 100 percent, the combined audio frequency harmonics measured in the output of the

system shall not exceed the root-mean-square values given in the following table:

Modulating frequency:	Distortion percent
50 to 100 cycles	3.5
100 to 7,500 cycles	2.5
7,500 to 15,000 cycles	3.0

(a) Measurements shall be made employing 75 microsecond deemphasis in the measuring equipment and 75 microsecond preemphasis in the transmitting equipment, and without compression if a compression amplifier is employed. Harmonics shall be included to 30 kc.[2]

(b) It is recommended that none of the three main divisions of the system (transmitter, studio to transmitter circuit, and audio facilities) contribute over one-half of these percentages since at some frequencies the total distortion may become the arithmetic sum of the distortions of the divisions.

(4) The transmitting system output noise level (frequency modulation) in the band of 50 to 15,000 cycles shall be at least 60 decibels below 100 percent modulation (frequency swing of ±75 kilocycles). The measurement shall be made using 400 cycle modulation as a reference. The noise-measuring equipment shall be provided with standard 75 microsecond deemphasis; the ballistic characteristics of the instrument shall be similar to those of the standard VU meter.

(5) The transmitting system output noise level (amplitude modulation) in the band of 50 to 15,000 cycles shall be at least 50 decibels below the level representing 100 percent amplitude modulation. The noise-measuring equipment shall be provided with standard 75-microsecond deemphasis; the ballistic characteristics of the instrument shall be similar to those of the standard VU meter.

(6) Automatic means shall be provided in the transmitter to maintain the assigned center frequency within the allowable tolerance (±2000 cycles).

(7) The transmitter shall be equipped with suitable indicating instruments for the determination of operating power and with other instruments as are necessary for proper adjustment, operation, and maintenance of the equipment (see Section 9).

(8) Adequate provision shall be made for varying the transmitter output power to compensate for excessive variations in line voltage or for other factors affecting the output power.

(9) Adequate provision shall be provided in all component parts to avoid overheating at the rated maximum output power.

(10) Means should be provided for connection and continuous operation of approved frequency and modulation monitors.

(11) If a limiting or compression amplifier is employed, precaution should be maintained in its connection in the circuit due to the use of preemphasis in the transmitting system.

B. *Construction.* In general, the transmitter shall be constructed either on racks and panels or in totally enclosed frames protected as required by article 810[3] of the National Electrical Code and set forth below:

(1) Means shall be provided for making all tuning adjustments, requiring voltages in excess of 350 volts to be applied to the circuit, from the front of the panels with all access doors closed.

(2) Proper bleeder resistors or other automatic means shall be installed across all capacitor banks to lower any voltage which may remain accessible with access door open to less than 350 volts within 2 seconds after the access door is opened.

(3) All plate supply and other high voltage equipment, including transformers, filters, rectifiers and motor generators, shall be protected so as to prevent injury to operating personnel.

(a) Commutator guards shall be provided on all high voltage rotating machinery. Coupling guards should be provided on motor generators.

(b) Power equipment and control panels of the transmitter shall meet the above requirements (exposed 220 volt AC switching equipment on the front of the power control panels is not recommended but is not prohibited).

(c) Power equipment located at a broadcast station but not directly associated with the transmitter (not purchased as part of same), such as power distribution panels, are not under the jurisdiction of the Commission; therefore § 3.254 does not apply.

(4) Metering equipment:

(a) All instruments having more than 1,000 volts potential to ground on the movement shall be protected by a cage or cover in addition to the regular case. (Some instruments are designed by the manufacturer to operate safely with voltages in excess of 1,000 volts on the movement. If it can be shown by the manufacturer's rating that the instrument will operate safely at the applied potential, additional protection is not necessary.)

(b) In case the plate voltmeter is located on the low potential side of the multiplier resistor with the potential of the high potential terminal of the instrument at or less than 1,000 volts above ground, no protective case is required. However, it is good practice to protect voltmeters subject to more than 5,000 volts with suitable over-voltage protective devices across the instrument terminals in case the winding opens.

(c) Transmission line meters and any other radio frequency instrument which may be necessary for the operator to read shall be so installed as to be easily and accurately read without the operator having to risk contact with circuits carrying high potential radio frequency energy.

(5) It is recommended that component parts comply as much as possible with the component specifications designated by the Army-Navy Electronics Standards Agency.

C. *Wiring and shielding.* (1) The transmitter panels or units shall be wired in accordance with standard switchboard practice, either with insulated leads properly cabled and supported or with rigid bus bar properly insulated and protected.

(2) Wiring between units of the transmitter, with the exception of circuits carrying radio frequency energy, shall be installed in conduits or approved fiber or metal raceways for protection from mechanical injury.

(3) Circuits carrying radio frequency energy between units shall be coaxial, two wire balanced lines, or properly shielded.

(4) All stages or units shall be adequately shielded and filtered to prevent interaction and radiation.

(5) The frequency and modulation monitors and associated radio frequency lines to the transmitter shall be thoroughly shielded.

D. *Installation.* (1) The installation shall be made in suitable quarters.

(2) Since an operator must be on duty during operation, suitable facilities for his welfare and comfort shall be provided.

E. *Spare tubes.* A spare tube of every type employed in the transmitter and frequency and modulation monitors shall be kept on hand at the equipment location. When more than one tube of any type are employed, the following table determines the number of spares of that type required:

Number of each type employed:	Spares required
1 or 2	1
3 to 5	2
6 to 8	3
9 or more	4

An accurate circuit diagram and list of required spare tubes, as furnished by the manufacturer of the equipment, shall be retained at the transmitter location.

F. *Operation.* In addition to specific requirements of the rules governing FM broadcast stations, the following operating requirements are specified:

(1) The maximum percentage of modulation shall be maintained in accordance with § 3.268. However, precautions shall be taken so as not to substantially alter the dynamic characteristics of musical programs.

(2) Spurious emissions, including radio frequency harmonics, shall be maintained at as low a level as practicable at all times in accordance with good engineering practice.

(3) If a limiting or compression amplifier is employed, care should be main-

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[2] See Section 13 for measurement frequencies and other information.

[3] The pertinent sections of article 810 of the National Electrical Code read as follows:

"8191. *General.* Transmitters shall comply with the following:

"a. *Enclosing.* The transmitter shall be enclosed in a metal frame or grille, or separated from the operating space by a barrier or other equivalent means, all metallic parts of which are effectually connected to ground.

"b. *Grounding of controls.* All external metallic handles and controls accessible to the operating personnel shall be effectually grounded. No circuit in excess of 150 volts shall have any parts exposed to direct contact. A complete dead-front type of switchboard is preferred.

"c. *Interlocks on doors.* All access doors shall be provided with interlocks which will disconnect all voltages in excess of 350 volts when any access door is opened."

tained in its use due to preemphasis in the transmitting system.

G. *Studio equipment.* (1) Studio equipment shall be subject to all the above requirements where applicable except as follows:

(a) If properly covered by an underwriter's certificate, it will be considered as satisfying safety requirements.

(b) Section 8191 of article 810 of the National Electrical Code shall apply for voltages only in excess of 500 volts.

(2) No specific requirements are made with regard to the microphones to be employed. However, microphone performance (including compensating networks, if employed) shall be compatible with the required performance of the transmitting system.

(3) No specific requirements are made relative to the design and acoustical treatement of studios. However, the design of studios, particularly the main studio, shall be compatible with the required performance characteristics of FM broadcast stations.

H. *Facsimile: Engineering standards.* The following standards apply to facsimile broadcasting under § 3.266 of the rules and regulations:

1. Rectilinear scanning shall be employed, with scanning spot progressing from left to right and scanned lines progressing from top to bottom of subject copy.

2. The standard index of cooperation shall be 984.

3. The number of scanning lines per minute shall be 360.

4. The line-use ratio shall be ⅞, or 315° of the full scanning cycle.

5. The ⅛ cycle or 45° not included in the available scanning line shall be divided into 3 equal parts, the first 15° being used for transmission at approximately white level, the second 15° for transmission at approximately black level, and the third 15° for transmission at approximately white level.

6. An interval of not more than 12 seconds shall be available between two pages of subject copy, for the transmission of a page-separation signal and/or other services.

7. Amplitude or frequency (frequency-shift) modulation of the subcarrier shall be used.

8. Subcarrier modulation shall normally vary approximately linearly with the optical density of the subject copy.

9. Negative modulation shall be used, i. e., for amplitude modulation of subcarrier, maximum subcarrier amplitude and maximum radio frequency swing on black; for frequency modulation of subcarrier, highest instantaneous frequency of subcarrier on black.

10. Subcarrier noise level shall be maintained at least 30 db below maximum (black) picture modulation level, at the radio transmitter input.

11. The facsimile subcarrier transmission shall be conducted in the frequency range between 22 and 28 kilocycles. Should amplitude modulation of the subcarrier be employed the subcarrier frequency shall be 25 kilocycles with sidebands extending not more than 3 kilocycles in either direction from the subcarrier frequency. Should frequency modulation of the subcarrier be employed the total swing of the subcarrier shall be within the range from 22 to 28 kilocycles, with 22 kilocycles corresponding to white and 28 kilocycles corresponding to black on the transmitted copy. In multiplex operation the modulation of the FM carrier by the modulated subcarrier shall not exceed 5 percent. In simplex operation the modulation of the FM carrier by the modulated subcarrier shall not exceed 30 percent.

12. During periods of multiplex facsimile transmission, frequency modulation of the FM carrier caused by the aural signals shall, in the frequency range from 20 to 30 kilocycles, be at least 60 db. below 100 percent modulation. Frequency modulation of the FM carrier caused by the facsimile signals shall, in the frequency range from 50 to 15,000 cycles, be at least 60 db. below 100 percent modulation.

SECTION 9. INDICATING INSTRUMENTS PURSUANT TO § 3.258

The following requirements and specifications shall apply to indicating instruments used by FM broadcast stations:

A. Instruments indicating the plate current or plate voltage of the last radio stage (linear scale instruments) shall meet the following specifications:

(1) Length of scale shall be not less than $2\frac{3}{10}$ inches.

(2) Accuracy shall be at least 2 percent of the full scale reading.

(3) Scale shall have at least 40 divisions.

(4) Full scale reading shall not be greater than five times the minimum normal indication.

B. Instruments indicating transmission line current or voltage shall meet the following specifications:

(1) Instruments having linear scales shall meet the requirements of A (1), (2), (3), and (4) above.

(2) Instruments having logarithmic or square law scales:

(*a*) Shall meet requirements A (1) and (2) for linear scale instruments.

(*b*) Full scale reading shall not be greater than three times the minimum normal indication.

(*c*) No scale division above one-third full scale reading shall be greater than one-thirtieth of the full scale reading.

C. Radio frequency instruments having expanded scales:

(1) Shall meet requirements A (1), (2), and (4) for linear scale instruments.

(2) No scale division above one-fifth full scale reading shall be greater than one-fiftieth of the full scale reading.

(3) The meter face shall be marked with the words "Expanded scale" or the abbreviation thereof (E. S.).

D. No required instrument, the accuracy of which is questionable, shall be employed. Repairs and recalibration of instruments shall be made by the manufacturer, or by an authorized instrument repair service of the manufacturer, or by some other properly qualified and equipped instrument repair service. In any event the repaired instrument must be supplied with a certificate of calibration.

E. Recording instruments may be employed in addition to the indicating instruments to record the transmission line current or voltage and the direct plate current and/or direct plate voltage of the last radio stage, provided that they do not affect the operation of the circuits or accuracy of the indicating instruments. If the records are to be used in any proceeding before the Commission as representative of operation, the accuracy must be the equivalent of the indicating instruments and the calibration shall be checked at such intervals as to insure the retention of the accuracy.

F. The function of each instrument used in the equipment shall be clearly and permanently shown on the instrument itself or on the panel immediately adjacent thereto.

SECTION 10. AUXILIARY TRANSMITTERS

Auxiliary transmitters may not exceed the power rating or operating power range of the main transmitter, but need not conform to the performance characteristics specified by Section 8A (2) to 8A (5) inclusive. The subsequent portions of Section 8 apply to auxiliary transmitters.

SECTION 11. (Reserved)

SECTION 12. FREQUENCY AND MODULATION MONITORS AT AUXILIARY TRANSMITTERS

A. The following shall govern the installation of approved frequency and modulation monitors at auxiliary transmitters of FM broadcast stations in compliance with these rules:

(1) In case the auxiliary transmitter location is at a site different from that of the main transmitter, an approved frequency monitor shall be installed at the auxiliary transmitter except when the frequency of the auxiliary transmitter can be monitored by means of the frequency monitor at the main transmitter. When the auxiliary transmitter is operated without a frequency monitor under this exemption, it shall be monitored by means of the frequency monitor at the main transmitter.

(2) The licensee will be held strictly responsible for any center frequency deviation of the auxiliary transmitter in excess of 2,000 cycles from the assigned frequency, even though exempted by the above from installing an approved frequency monitor.

(3) Installation of an approved modulation monitor at the location of the auxiliary transmitter, when different from that of the main transmitter, is optional with the licensee. However, when it is necessary to operate the auxiliary transmitter beyond two calendar days, a modulation monitor shall be installed and operated at the auxiliary transmitter. The monitor (if taken from the main transmitter) shall be reinstalled at the main transmitter immediately upon resumption of operation of the main transmitter.

(4) In all cases where the auxiliary transmitter and the main transmitter have the same location, the same frequency and modulation monitors may be used for monitoring both transmitters, provided they are so arranged as to be

readily switched from one transmitter to the other.

SECTION 13. REQUIREMENTS FOR TYPE APPROVAL OF TRANSMITTERS

A. Section 3.254 of the Rules and Section 8 of these Standards concern the design, construction, and technical operation of FM broadcast station equipment. In order to facilitate the filing of and action on applications for construction permits specifying equipment of standard manufacture, the Commission will approve, as complying with the technical requirements, such equipment by type, subject to the following conditions and in accordance with the following procedure:

(1) Approval of equipment by the Commission is only to the effect that insofar as can be determined from the data supplied, the equipment complies with the current requirements of good engineering practice and the current technical Rules and Regulations of the Commission. The approval may be withdrawn upon subsequent inspection or operation, showing the equipment is not as represented or does not comply with the technical Rules and Regulations of the Commission and the requirements of good engineering practice.

(2) Such approval shall not be construed to mean that the equipment will be satisfactory as the state of the art progresses and/or as the Rules and Regulations of the Commission may be changed as deemed advisable.

(3) Applicants specifying equipment of approved manufacture need not submit detailed descriptions and diagrams where the correct type number is specified provided that the equipment proposed is identical with that approved.

(4) In passing on equipment, no consideration is given by the Commission to patent rights.

(5) For approval of FM broadcast transmitters, manufacturers shall submit FCC Form 301 completed with respect to all pertinent sections (two sworn copies). In addition or included therein shall be the data set forth below, all of which shall be verified before a notary public.[4]

(a) Photographs or drawings, or any other evidence that construction is in accordance with the requirements of good engineering practice.

(b) Data and curves showing over-all audio frequency response from 50 to 15,000 cycles for approximately 25, 50, and 100 percent modulation. Measurements shall be made on at least the following modulation frequencies: 50, 100, 400, 1,000, 5,000, 10,000, and 15,000 cycles. This shall be plotted below a standard 75 microsecond preemphasis curve (see Fig. 3).

(c) Data on audio frequency harmonics for 25, 50, and 100 percent modulation for the fundamental frequencies of 50, 100, 400, 1000, and 5000 cycles. Data on audio frequency harmonics for 100 percent modulation for fundamental frequencies of 10,000 and 15,000 cycles. Measurements shall include harmonics to 30,000 cycles. (Measurements at 10,000 and 15,000 cycles at 25 and 50 percent modulation are not practical at this time, due to the deemphasis in the measuring equipment.)

(d) Carrier hum and extraneous noise (AM and FM) generated within the equipment and measured as the level below 100 percent modulation.

(e) Means of varying output power to compensate for power supply voltage variations.

(f) Data and curves on mean frequency stability for variations in ambient temperatures over the ranges encountered in practice.

(g) Data and curves on frequency stability for variations in power supply voltage from 85 to 115 percent normal.

(h) Net sale price.

SECTION 14. REQUIREMENTS FOR TYPE APPROVAL OF FREQUENCY MONITORS

A. *General requirements.* In general a frequency monitor for FM broadcast stations requires a stable source of radio frequency energy whose frequency is accurately known and a means of comparing the transmitter center frequency with this stable source. The visual indicator is calibrated to indicate the deviation of the transmitter center frequency from the frequency assigned.

(1) Approval of a frequency monitor for FM broadcast stations will be considered on the basis of data submitted by the manufacturer. Any manufacturer desiring to submit a monitor for approval shall supply the Commission with full details (two sworn copies).

(2) In approving a frequency monitor based on these tests and specifications, the Commission merely recognizes that the type of monitor has the inherent capability of functioning in compliance with § 3.252, if properly constructed, maintained and operated. The Commission accepts no responsibility beyond this and further realizes that monitors may have a limited range over which the visual indicator will determine deviations. Accordingly, it may be necessary that adjunct equipment be used to determine major deviations.

(3) No change whatsoever will be permitted in the monitors sold under approval number issued by the Commission except when the licensee or the manufacturer is specifically authorized to make such changes. When it is desired to make any change, either mechanical or electrical, the details shall be submitted to the Commission for its consideration.

(4) Approval is given subject to withdrawal if the unit proves defective in service and cannot be relied upon under usual conditions of maintenance and operation encountered in the average FM broadcast station. Withdrawal of approval means that no further units may be installed by FM broadcast stations for the purpose of complying with § 3.252; however, this will not affect units already sold unless it is found that there has been an unauthorized change in design or construction or that the material or workmanship is defective.

B. *General specifications.* The general specifications that frequency monitors shall meet before they will be approved by the Commission are as follows:[5]

(1) The unit shall have an accuracy of at least ±1000 cycles under ordinary conditions (temperature, humidity, power supply variations and other conditions which may affect its accuracy) encountered in FM broadcast stations throughout the United States, for any channel within the FM broadcast band.

(2) The range of the indicating device shall be at least from 2000 cycles below to 2000 cycles above the assigned center frequency.

(3) The scale of the indicating device shall be so calibrated as to be accurately read within at least 100 cycles.

(4) Means shall be provided for adjustment of the monitor indication to agree with an external standard.

(5) The monitor shall be capable of continuous operation and its circuit shall be such as to permit continuous monitoring of the transmitter center frequency.

(6) Operation of the monitor shall have no deleterious effect on the operation of the transmitter or the signal emitted therefrom.

C. *Tests to be made for approval of FM broadcast frequency monitors.* The manufacturer of a monitor shall submit data on the following at the time of requesting approval:

(1) Constancy of oscillator frequency, as measured several times in 1 month.

(2) Constancy of oscillator frequency when subjected to vibration tests which would correspond to the treatment received in shipping, handling and installing the instrument.

(3) Accuracy of readings of the frequency deviation instrument.

(4) Functioning of frequency adjustment device.

(5) Effects on frequency and readings, of the changing of tubes, of voltage variations, and of variations of room temperature through a range not to exceed 10° to 40° C.

(6) Response of indicating instrument to small changes of frequency.

(7) General information on the effect of tilting or tipping or other tests to determine ability of equipment to withstand shipment.

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[4] In connection with its type approval of FM equipment, the Commission may send a representative to observe tests made of such equipment by the manufacturer.

[5] In connection with its type approval of FM equipment, the Commission may send a representative to observe tests made of such equipment by the manufacturer.

D. Various other tests may be made or required, such as effects of variation of input from the transmitter depending upon the character of the apparatus.

E. Tests shall be conducted in such a manner as to approximate actual operating conditions as nearly as possible. The equipment under test shall be operated on any channel in the FM broadcast band.

SECTION 15. REQUIREMENTS FOR TYPE APPROVAL OF MODULATION MONITORS

A. The modulation monitor may be a part of the frequency monitor. Approval of a modulation monitor for FM broadcast stations will be considered on the basis of data submitted by the manufacturer. Any manufacturer desiring to submit a monitor for approval shall supply the Commission with full details (two sworn copies).

B. The specifications that the modulation monitor shall meet before it will be approved by the Commission are as follows:[6]

(1) A means for insuring that the transmitter input to the modulation monitor is proper.

(2) A modulation peak indicating device that can be set at any predetermined value from 50 to 120 percent modulation (±75 kc swing is defined as 100 percent modulation) and for either positive or negative swings (i. e., either above or below transmitter center frequency).

(3) A semi-peak indicator with a meter having the characteristics given below shall be used with a circuit such that peaks of modulation of duration between 40 and 90 milliseconds are indicated to 90 percent of full value and the discharge rate adjusted so that the pointer returns from full reading to 10 percent of zero within 500 to 800 milliseconds. A switch shall be provided so that this meter will read either positive or negative swings.

(a) The characteristics of the indicating meter are as follows:

(i) *Speed.* The time for one complete oscillation of the pointer shall be 290 to 350 milliseconds. The damping factor shall be between 16 and 200.

(ii) *Scale.* The meter scale shall be similar in appearance to that of a standard VU meter. The scale length between 0 and 100 percent modulation markings should be at least 2.3 inches. In addition to other markings a small mark for 133 percent modulation and designated as such should be included for the purpose of testing transmitters with 100 kc swing.

(4) The accuracy of reading of percentage of modulation shall be within ±5 percent modulation percentage at any percentage of modulation up to 100 percent modulation.

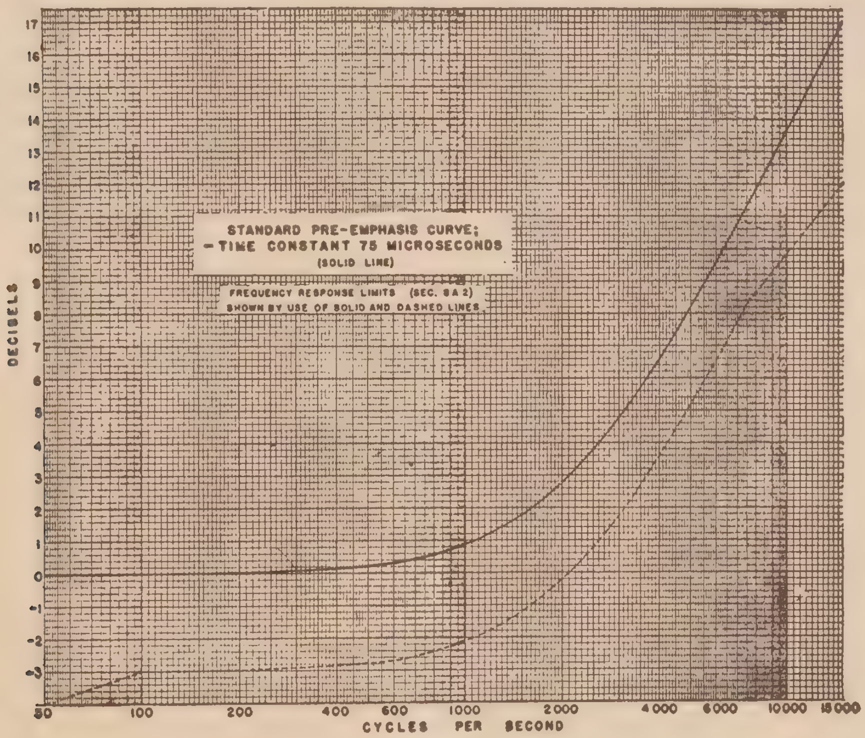

FIGURE 3.

(5) The frequency characteristic curve shall not depart from a straight line more than ±½ db. from 50 to 15,000 cycles. Distortion shall be kept to a minimum.

(6) The monitor shall not absorb appreciable power from the transmitter.

(7) Operation of the monitor shall have no deleterious effect on the operation of the transmitter.

(8) General design, construction, and operation shall be in accordance with good engineering practice.

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[6] In connection with its type approval of FM equipment, the Commission may send a representative to observe tests made of such equipment by the manufacturer.

SECTION 16. APPROVED TRANSMITTERS

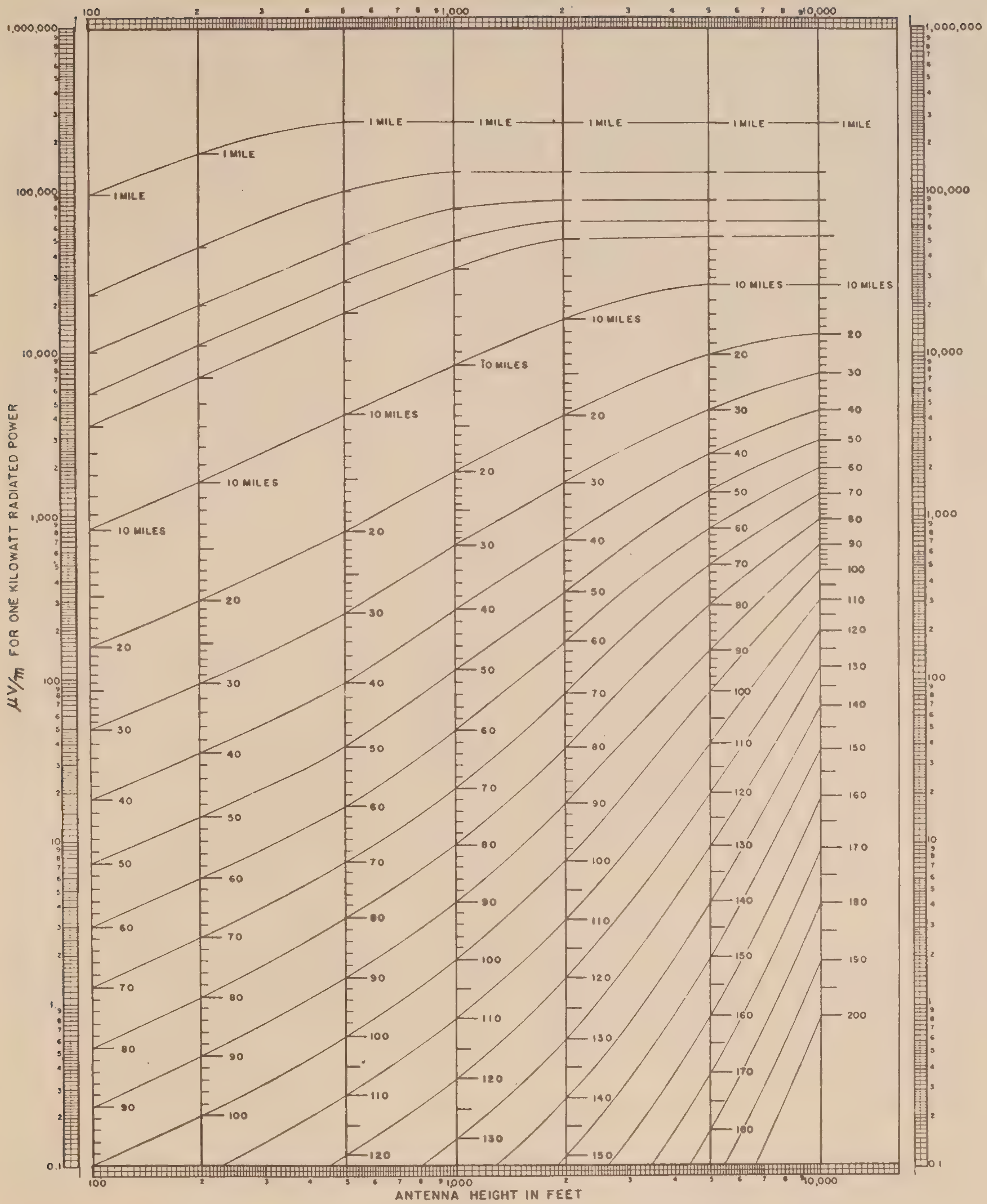
Manufacturer's name	Type No.	Rated power
Collins Radio Co., Cedar Rapids, Iowa.	738A	10 watts.
	738B	10 watts.
	731A	250 watts.
	732A	1 kw.
	733A	3 kw.
	737A	5 kw.
	734A	10 kw.
Federal Telephone & Radio Corp., Newark, N. J.	191A	1 kw.
	192A	3 kw.
	192AZ	3 kw.
	193A	10 kw.
Gates Radio Co, Quincy, Ill.	BF-E-10	10 watts.
	BF-250A	250 watts.
	BF-250B	250 watts.
	BF-1A	1 kw.
	BF-3A	3 kw.
	BF-3B	3 kw.
	BF-3C	3 kw.
	BF-3D	3 kw.
	BF-10A	10 kw.
General Electric Co., Schenectady, N. Y.	BT-11-B	10 watts.
	BT-12-A	10 watts.
	BT-12-B	10 watts.
	BT-1-A	250 watts.
	BT-1-B	250 watts.
	BT-2-A	1 kw.
	BT-2-B	1 kw.
	BT-3-A	3 kw.
	BT-3-B	3 kw.
	BT-4-A	10 kw.
	BT-4-B	10 kw.
	BT-5-A	50 kw.
Harvey Radio Laboratories, Inc., Cambridge, Mass.	FM-500	250 watts.
Radio Corp. of America, New York, N Y.	MI-7016	Exciter.
	BTF-250A	250 watts.
	BTF-1C	1 kw
	BTF-3B	3 kw.
	BTF-5A	5 kw.
	BTF-10B	10 kw.
	BTF-50A	50 kw.
Radio Engineering Laboratories, Long Island City, N. Y	549A-DL	250 watts
	701	1 kw.
	518B-DL	1 kw.
	518D-DL	1 kw
	519-DL	3 kw.
	520-DL	10 kw.
Raytheon Manufacturing Co., Waltham, Mass.	RF 250	250 watts.
	RF-1000	1 kw.
	RF-3	3 kw
	RF-10	10 kw
Western Electric Co., Inc., New York, N Y	503 B-1	1 kw.
	503 B-2	1 kw.
	504 B-2	3 kw.
	506 B-2	10 kw.
Westinghouse Electric & Manufacturing Co., Baltimore, Md.	MO/MP	Exciter.
	FM-1	1 kw.
	FM-3	3 kw.
	FM-10	10 kw.
	FM-50	50 kw.

SECTION 17. APPROVED FREQUENCY MONITORS

Manufacturer's name	Type No.
Doolittle Radio, Inc., Chicago, Ill.	FD-11.
General Electric Co., Schenectady, N. Y	BM-1-A
General Radio Co., Cambridge, Mass.	1170-A.
Hewlett-Packard Co., Palo Alto, Calif	335B.
Radio Engineering Laboratories, Long Island City, N. Y	600. 600A 600R. 600T
Western Electric Co., Inc., New York, N. Y.	5A.

SECTION 18. APPROVED MODULATION MONITORS

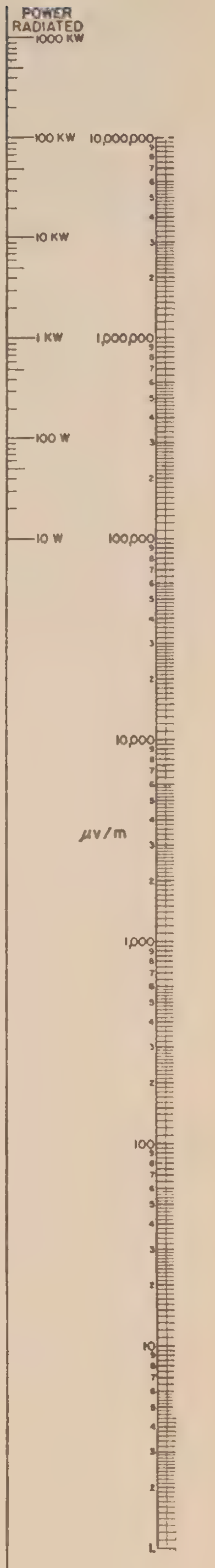
Manufacturer's name	Type No.
Doolittle Radio, Inc., Chicago, Ill.	FD-11.
General Electric Co., Schenectady, N. Y.	BM-1-A.
General Radio Co., Cambridge, Mass.	1170-A.
Hewlett-Packard Co., Palo Alto, Calif.	335B.
Radio Engineering Laboratories, Long Island City, N. Y.	600. 600A. 600R. 600T
Western Electric Co., Inc., New York, N. Y.	5A.



GROUND WAVE SIGNAL RANGE FOR F M BROADCASTING

98mc, $\sigma = 5 \times 10^{-14}$ e.m.u., $\epsilon = 15$, RECEIVING ANTENNA HEIGHT 30 FEET
FOR HORIZONTAL (AND APPROX FOR VERTICAL) POLARIZATION

Figure 1



SLIDING SCALE FOR
USE WITH FIGURES 1
AND 2

SUBPART C—RULES GOVERNING NONCOMMERCIAL EDUCATIONAL FM BROADCAST STATIONS

CLASSIFICATION OF STATIONS AND ALLOCATION OF FREQUENCIES

§ 3.501 *Channels available for assignment.*[1] The channels available for noncommercial educational FM broadcasting are listed in the table below, together with numerical designations for convenience:

Frequency (Mc):	*Channel No.*	Frequency (Mc):	*Channel No.*
88.1	201	90.1	211
88.3	202	90.3	212
88.5	203	90.5	213
88.7	204	90.7	214
88.9	205	90.9	215
89.1	206	91.1	216
89.3	207	91.3	217
89.5	208	91.5	218
89.7	209	91.7	219
89.9	210	91.9	220

§ 3.502 *State-wide plans.* In considering the assignment of a channel for a noncommercial educational FM broadcast station, the Commission will take into consideration the extent to which each application meets the requirements of any state-wide plan for noncommercial educational FM broadcast stations filed with the Commission, provided that such plans afford fair treatment to public and private educational institutions, urban and rural, at the primary, secondary, higher, and adult educational levels, and appear otherwise fair and equitable.

§ 3.503 *Licensing requirements and service.* The operation of, and the service furnished by noncommercial educational FM broadcast stations shall be governed by the following:

(a) A noncommercial educational FM broadcast station will be licensed only to a nonprofit educational organization and upon showing that the station will be used for the advancement of an educational program.

(1) In determining the eligibility of publicly supported educational organizations, the accreditation of their respective state departments of education shall be taken into consideration.

(2) In determining the eligibility of privately controlled educational organizations, the accreditation of state departments of education and/or recognized regional and national educational accrediting organizations shall be taken into consideration.

(b) Each station may transmit programs directed to specific schools in a system or systems for use in connection with the regular courses as well as routine and administrative material pertaining thereto and may transmit educational, cultural, and entertainment programs to the public.

(c) Each station shall furnish a nonprofit and noncommercial broadcast service. No sponsored or commercial program shall be transmitted nor shall commercial announcements of any character be made. A station shall not transmit the programs of other classes of broadcast stations unless all commercial announcements and commercial references in the continuity are eliminated.

§ 3.504 *Frequency, power and service area.* (a) In the assignment of frequency and power to a noncommercial educational FM broadcast station the Commission will consider with the application: (1) the area served by applicant's existing educational facilities; and (2) the provisions of any statewide plan on file with the Commission which meets the requirements of § 3.502. A station licensed for transmitter power output of 10 watts or less normally will be licensed to operate on the frequency 88.1 megacycles; however, should it appear that operation on this frequency would cause objectionable interference, such station may be licensed to operate on the next higher frequency that would not cause objectionable interference.

(b) The license of each noncommercial educational FM broadcast station licensed for transmitter power output of 10 watts or less shall specify the maximum authorized operating power output of the transmitter. The license of each noncommercial educational FM broadcast station licensed for transmitter power output above 10 watts shall specify the authorized effective radiated power of the station and the authorized operating power output of the transmitter.

(c) Each application for a new noncommercial educational FM broadcast station or increase in facilities of an existing station which proposes transmitter power output above 10 watts shall contain a determination of the antenna height above average terrain and the extent of the 1 mv/m and 50 uv/m contours of the proposed station by the methods prescribed in the Standards of Good Engineering Practice Concerning FM Broadcast Stations.

§ 3.505 *Standards of good engineering practice.* The definitions and interference standards contained in the Standards of Good Engineering Practice Concerning FM Broadcast Stations shall be applicable to noncommercial educational FM broadcast stations. Other portions of such Standards shall be applicable to the extent specifically prescribed by this part.

RULES GOVERNING ADMINISTRATIVE PROCEDURE

§ 3.511 *Application for noncommercial educational FM broadcast stations.* Each applicant for a construction permit for a new noncommercial educational FM broadcast station, change in facilities of any existing noncommercial educational FM broadcast station, or noncommercial educational FM broadcast station license or modification of license shall file with the Commission in Washington, D. C., two copies of applications and a like number of exhibits and other papers incorporated therein and made a part thereof. Only the original copy need be sworn to. If the application is for authority to construct or make changes in a noncommercial educational FM broadcast station, FCC Form 340 should be filed; for a noncommercial educational FM license, FCC Form 341 should be filed.

§ 3.512 *Full disclosures.* Each application shall contain full and complete disclosures with regard to all matters and things required to be disclosed by the application forms.

§ 3.513 *Installation of apparatus.* Applications for construction permits or modification thereof involving the installation of new transmitting apparatus should be filed at least 60 days prior to the contemplated installation.

§ 3.514 *Period of construction.* Each construction permit will specify a maximum of 8 months from the date of granting thereof as the time within which construction of the station shall be completed and the station ready for operation, unless otherwise determined by the Commission upon proper showing in any particular case. Each construction permit shall bear the date of the Commission's action authorizing the issuance of the construction permit. Where a conditional grant is ordered, the construction permit shall be dated as of the time when all conditions have been satisfied.

§ 3.515 *Forfeiture of construction permits; extension of time.* (a) A construction permit shall be automatically forfeited if the station is not ready for operation within the time specified therein or within such further time as the Commission may have allowed for completion, and a notation of the forfeiture of any construction permit under this provision will be placed in the records of the Commission as of the expiration date.

(b) Any application for extension of time (FCC Form 701) within which to construct a station shall be filed at least 30 days prior to the expiration date of such permit if the facts supporting such application for extension are known to the applicant in time to permit such filing. In other cases such applications will be accepted upon a showing satisfactory to the Commission of sufficient reasons for filing within less than 30 days prior to the expiration date. Such applications will be granted upon a specific and detailed showing that the failure to complete was due to causes not under the control of the grantee, or upon a specific and detailed showing of other matters sufficient to justify the extension.

(c) If a construction permit has been allowed to expire for any reason, application may be made for a new permit on FCC Form 321 "Application for a Construction Permit to Replace Expired Permit".

§ 3.516 *Equipment tests.* (a) During the process of construction of a noncommercial educational FM broadcast station, the permittee, after notifying the Commission and Engineer in Charge of the radio district in which the station is located, may without further authority of the Commission, conduct equipment tests for the purpose of such adjustments and measurements as may be necessary to assure compliance with the terms of the construction permit, the technical provisions of the application therefor, the rules and regulations, and the applicable engineering standards.

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[1] The frequency 89.1 Mc., Channel No. 206 in the New York City metropolitan area is reserved for the use of the United Nations with the equivalent of an antenna height of 500 feet above average terrain and effective radiated power of 20 kw., and the Commission will make no assignments which would cause objectionable interference with such use.

(b) The Commission may notify the permittee to conduct no tests or may cancel, suspend, or change the date for the beginning of equipment tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Equipment tests may be continued so long as the construction permit shall remain valid.

(d) Inspection of a station will ordinarily be required during the equipment test period and before the commencement of the program test. After construction and after adjustments and measurements have been completed to show compliance with the terms of the construction permit, the technical provisions of the application therefor, the rules and regulations and the applicable engineering standards, the permittee should notify the Engineer in Charge of the radio district in which the station is located that it is ready for inspection.

(e) The authorization for tests embodied in this section shall not be construed as constituting a license to operate but as a necessary part of construction.

§ 3.517 *Program tests.* (a) Upon completion of construction of a noncommercial educational FM broadcast station in accordance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations and applicable engineering standards, and when an application for station license has been filed showing the station to be in satisfactory operating condition,[2] the permittee may request authority to conduct program tests: *Provided*, That such request shall be filed with the Commission at least ten (10) days prior to the date on which it is desired to begin such operation and that the Engineer in Charge of the radio district in which the station is located is notified.

(b) Program tests shall not commence until specific Commission authority is received. The Commission reserves the right to change the date of the beginning of such tests, or to suspend or revoke the authority for program tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Unless sooner suspended or revoked program test authority continues valid during Commission consideration of the application for license and during this period further extension of the construction permit is not required. Program test authority shall be automatically terminated by final determination upon the application for station license.

(d) All operation under program test authority shall be in strict compliance with the rules governing noncommercial educational FM broadcast stations and in strict accordance with representations made in the application for license pursuant to which the tests were authorized.

(e) The grant of program test authority shall not be construed as approval by the Commission of the application for station license.

§ 3.518 *Normal license period.* (a) All initial licenses covering construction permits for new noncommercial educational FM broadcast stations will be issued so as to expire at the hour of 3 a. m., eastern standard time, and will be issued for a minimum period of one year and a maximum period of one year and 11 months to expire in accordance with the following schedule:

(1) For stations operating on the frequencies 88.1, 88.3, 88.5, 88.7, 88.9, 89.1, 89.3, 89.5, 89.7 and 89.9 Mcs., June 1.

(2) For stations operating on the frequencies 90.1 90 3, 90.5, 90.7, 90.9, 91.1, 91.3, 91.5, 91.7 and 91.9 Mcs., September 1.

(b) All renewals of noncommercial educational FM broadcast station licenses will be issued so as to expire at the hour of 3 a. m., eastern standard time, and will be issued for a maximum period of three years to expire in accordance with the following schedule and at 3-year intervals thereafter:

(1) For stations operating on the frequencies 88.1, 88.3, 88.5 Mcs., June 1, 1948.

(2) For stations operating on the frequencies 90.1, 90.3, 90.5 Mcs., September 1, 1948.

SEE OPIN.

(3) For stations operating on the frequencies 88.7, 88.9, 89.1 Mcs., June 1, 1949.

(4) For stations operating on the frequencies 90.7, 90.9, 91.1 Mcs., September 1, 1949.

(5) For stations operating on the frequencies 89.3, 89.5, 89.7, 89.9 Mcs., June 1, 1950.

(6) For stations operating on the frequencies 91.3, 91.5, 91.7, 91.9 Mcs., September 1, 1950.

§ 3.519 *License, simultaneous modification and renewal.* When an application is granted by the Commission necessitating the issuance of a modified license less than 60 days prior to the expiration date of the license sought to be modified, and an application for renewal of said license is granted subsequent or prior thereto (but within 30 days of expiration of the present license) the modified license as well as the renewal license shall be issued to conform to the combined action of the Commission.

§ 3.520 *Renewal of license.* (a) Unless otherwise directed by the Commission, each application for renewal of license shall be filed at least 60 days prior to the expiration date of the license sought to be renewed (FCC Form 342).

[illegible]

(b) Whenever the Commission regards an application for renewal of license as essential to the proper conduct of a hearing or investigation, and specifically directs that it be filed by a date certain, such application shall be filed within the time thus specified. If the licensee fails to file such application within the prescribed time, the hearing or investigation shall proceed as if such renewal application had been received.

§ 3.521 [Reserved.]

§ 3.522 *Repetitious applications.* (a) Where an applicant has been afforded an opportunity to be heard with respect to a particular application for a new noncommercial educational FM broadcast station, or for change of existing service or facilities, and the Commission has, after hearing or default, denied the application or dismissed it with prejudice, the Commission will not consider another application for a station of the same class to serve in whole or in part the same area, by the same applicant or by his successor or assignee, or on behalf of or for the benefit of the original parties in interest, until after the lapse of 12 months from the effective date of the Commission's order.

(b) Where an appeal has been taken from the action of the Commission in denying a particular application, another application for the same class of broadcast station and for the same area, in whole or in part, filed by the same applicant or by his successor or assignee, or on behalf or for the benefit of the original parties in interest, will not be considered until after the final disposition of such appeal.

§ 3.523 *Assignment or transfer of control.* (a) Application for consent to assignment of a noncommercial educational FM construction permit or license or for consent to voluntary transfer of control of a corporation holding a noncommercial education FM construction permit or license shall be filed with the Commission on FCC Form 314 (Assignment of License), FCC Form 315 (Transfer of Control) or FCC Form 316 (Short Form) at least 60 days prior to the contemplated effective date of assignment or transfer of control.

(b) *Pro forma* assignment or transfer applications shall be filed on FCC Form 316. Such cases are defined as cases in which:

(1) There is an assignment from an individual or individuals (including partnerships) to a corporation owned and controlled by such individuals or partnerships without any substantial change in their relative interests;

(2) There is an assignment from a corporation to its individual stockholders without effecting any substantial change in the disposition of their interests;

(3) There is an assignment or transfer by which certain partners or stockholders retire but no new ones are brought in, provided that the interest transferred is not a controlling one;

(4) There is a corporate reorganization which involves no substantial change in the beneficial ownership of the corporation;

(5) There is an involuntary transfer to an Executor, Administrator or other court appointed officer caused by death or legal disability except that this form does not cover assignments (or transfers) from the Executor, Administrator or

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[2] All data necessary to show compliance with the terms and conditions of the construction permit must be filed with the license application.

other court appointed officers to the ultimate beneficiary;

(6) There is an assignment or transfer from a corporation to a wholly owned subsidiary thereof or vice versa, or where there is an assignment from a corporation to a corporation owned or controlled by the assignor stockholders without substantial change in their interests.

(7) There is an assignment of less than a controlling interest in a partnership.

RULES RELATING TO EQUIPMENT

§ 3.551 *Transmitter power.* (a) The standard power rating of the transmitter of a noncommercial educational FM broadcast station licensed for transmitter power output above 10 watts shall be in accordance with the Standards of Good Engineering Practice Concerning FM Broadcast Stations.

(b) The standard power rating of the transmitter of a noncommercial educational FM broadcast station licensed for transmitter power output of 10 watts or less shall be not less than the authorized operating power and not more than 10 watts.

§ 3.552 *Frequency monitor.* (a) The licensee of each station licensed for transmitter power output above 10 watts shall have in operation, either at the transmitter or at the place where the transmitter is controlled, a frequency monitor of a type approved by the Commission which shall be independent of the frequency control of the transmitter.

(b) In the event that the frequency monitor becomes defective the station may be operated without the monitor pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: *Provided,* That:

(1) Appropriate entries shall be made in the operating log of the station showing the date and time the monitor was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the monitor is found to be defective and immediately after the repaired or replacement instrument has been installed and is functioning properly.

(3) The frequency of the station shall be compared with an external frequency source of known accuracy at sufficiently frequent intervals to insure that the frequency is maintained within the tolerance prescribed in § 3.568. An entry shall be made in the station log as to the method used and the results thereof.

(c) If conditions beyond the control of the licensee prevent the restoration of the monitor to service within the above-allowed period, informal request may be filed in accordance with § 1.332 (d) of this chapter with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

(d) The licensee of each non-commercial educational FM broadcast station licensed for transmitter power output of 10 watts or less shall provide for the measurement of the station frequency by a means independent of the frequency control of the transmitter. The station frequency shall be measured (1) when the transmitter is initially installed, (2) at any time the frequency determining elements are changed, and (3) at any time the licensee may have reason to believe the frequency has shifted beyond the tolerance specified by the Commission's rules.

§ 3.553 *Modulation monitor.* (a) The licensee of each station licensed for transmitter power output above 10 watts shall have in operation, either at the transmitter or at the place where the transmitter is controlled, a modulation monitor of a type approved by the Commission.

(b) In the event that the modulation monitor becomes defective the station may be operated without the monitor pending its repair or replacement for a period not in excess of 60 days: *Provided,* That:

(1) Appropriate entries shall be made in the operating log of the station showing the date and time the monitor was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the monitor is found to be defective and immediately after the repaired or replacement monitor has been installed and is functioning properly.

(3) During the period when the station is operated without the modulation monitor the licensee shall provide other suitable means for insuring that the modulation is maintained within the tolerance prescribed in § 3.568.

(c) If conditions beyond the control of the licensee prevent the restoration of the monitor to service within the above allowed period, informal request may be filed in accordance with § 1.332 (d) of this chapter with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

(d) The licensee of each non-commercial educational FM broadcast station licensed for transmitter power output of 10 watts or less shall provide a percentage modulation indicator or a calibrated program level meter from which a satisfactory indication of the percentage of modulation of the transmitter can be determined.

§ 3.554 *Transmitter performance.* (a) The transmitter proper and associated transmitting equipment of each noncommercial educational FM broadcast station licensed for transmitter power output above 10 watts shall be designed, constructed and operated in accordance with the Standards of Good Engineering Practice Concerning FM Broadcast Stations.

(b) The transmitter proper and associated transmitting equipment of each noncommercial educational FM broadcast station licensed for transmitter power output of 10 watts or less, although not required to meet all requirements of the Standard of Good Engineering Practice Concerning FM Broadcast Stations, shall be constructed with safety features in accordance with the specifications of article 810 of the current National Electrical Code as approved by the American Standards Association and shall be so operated, tuned, and adjusted that emissions are not radiated outside the authorized band which cause or which are capable of causing interference to the communications of other stations. The audio distortion, audio frequency range, carrier hum, noise level, and other essential phases of the operation which control the external effects, shall at all times be capable of providing satisfactory broadcast service. Studio equipment properly covered by an underwriter's certificate will be considered as satisfying safety requirements.

§ 3.555 *Auxiliary transmitter.* Upon showing that a need exists for the use of an auxiliary transmitter in addition to the regular transmitter of a broadcast station, a license therefor may be issued: *Provided,* That:

(a) An auxiliary transmitter may be installed either at the same location as the main transmitter or at another location.

(b) A licensed operator shall be in control whenever an auxiliary transmitter is placed in operation.

(c) The auxiliary transmitter shall be maintained so that it may be placed into immediate operation at any time for the following purposes:

(1) The transmission of the regular programs upon the failure of the main transmitter.

(2) The transmission of regular programs during maintenance or modification[3] work on the main transmitter, necessitating discontinuance of its operation for a period not to exceed 5 days.

(3) Upon request by a duly authorized representative of the Commission.

(d) The auxiliary transmitter shall be tested at least once each week to determine that it is in proper operating condition and that it is adjusted to the proper frequency, except that in case of operation in accordance with paragraph (c) of this section during any week, the test in that week may be omitted provided the operation under paragraph (c) is satisfactory. A record shall be kept of the time and result of each test.

(e) The auxiliary transmitter shall be equipped with satisfactory control equipment which will enable the maintenance of the frequency emitted by the station within the limits prescribed by the regulations in this part.

(f) The operating power of an auxiliary transmitter may be less than the authorized power of the main transmitter, but in no event shall it be greater than such power.

§ 3.556 *Alternate main transmitters.* The licensee of a noncommercial educational FM broadcast station may be licensed for alternate main transmitters provided that a technical need[4] for such alternate transmitters is shown and that the following conditions are met:

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[3] This includes the equipment changes which may be made without authority as set forth elsewhere in the rules and regulations and the Standards of Good Engineering Practice or as authorized by the Commission by letter or by construction permit. Where such operation is required for periods in excess of 5 days, request therefor shall be in accordance with § 1.324 of this chapter.

(a) Both transmitters are located at the same place.

(b) Both transmitters shall have the same power rating.

(c) Both transmitters shall meet the requirements of § 3.554.

§ 3.557 *Changes in equipment and antenna system.* Licenses of noncommercial educational FM broadcast stations shall observe the following provisions with regard to changes in equipment and antenna system:

(a) No changes in equipment shall be made:

(1) That would result in the emission of signals outside of the authorized channel.

(2) That would result in the external performance of the transmitter being in disagreement with § 3.554.

(b) Specific authority, upon filing formal application (FCC Form 340) therefor, is required for a change in service area or for any of the following changes:

(1) Changes involving an increase or decrease in the power rating of the transmitter.

(2) A replacement of the transmitter as a whole.

(3) Change in the location of the transmitting antenna.

(4) Change in antenna system, including transmission line.

(5) Change in location of main studio, if it is proposed to move the main studio to a different city from that specified in the license.

(6) Change in the power delivered to the antenna.

(7) Change in frequency control and/or modulation system.

(8) Change in the authorized transmitter remote control point(s).

(c) Other changes, except as above provided for in this section, may be made at any time without the authority of the Commission, provided that the Commission shall be promptly notified thereof and such changes shall be shown in the next application for renewal of license.

§ 3.558 *Indicating instruments.* (a) Each non-commercial FM broadcast station licensed for transmitter power above 10 watts shall be equipped with indicating instruments, which conform with the specifications set forth in the Standards of Good Engineering Practice Concerning FM Broadcast Stations for measuring the direct plate voltage and current of the last radio stage and the transmission line radio frequency current, voltage, or power. (See Indicating Instruments Pursuant to § 3.258 in the Standards of Good Engineering Practice Concerning FM Broadcast Stations, section 9 of Appendix to Subpart B.)

(b) In the event that any one of these indicating instruments becomes defective when no substitute which conforms with the required specifications is available, the station may be operated without the defective instrument pending its repair or replacement for a period not in excess of 60 days: *Provided,* That:

(1) Appropriate entries shall be made in the operating log of the station showing the date and time the meter was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the instrument is found to be defective and immediately after the repaired or replaced instrument has been installed and functioning properly.

(3) If the defective instrument is a plate voltmeter or plate ammeter in the last radio stage, the operating power shall be maintained by means of the radio frequency transmission line meter.

(c) If conditions beyond the control of the licensee prevent the restoration of the meter to service within the above allowed period, informal request may be filed in accordance with § 1.332 (d) of this chapter with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

RULES RELATING TO TECHNICAL OPERATION

§ 3.561 *Operating schedule.* Noncommercial educational FM broadcast stations are not required to operate on a regular schedule and no minimum number of hours of operation is specified; but the hours of actual operation during a license period shall be taken into consideration in considering the renewal of noncommercial educational FM broadcast licenses wherever it appears that the channels available for such stations are insufficient to meet the demand.

§ 3.562 *Experimental operation.* The period between 1:00 a. m., and 6:00 a. m., local standard time, may be used for experimental purposes in testing and maintaining apparatus by the licensee of any noncommercial educational FM broadcast station on its assigned frequency and not in excess of its authorized power, without specific authorization from the Commission.

§ 3.563 *Station inspection.* The licensee of any noncommercial educational FM broadcast station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 3.564 *Station and operator licenses; posting of.* (a) The station license and any other instrument of station authorization and the original license (FCC Form 759) of each station operator shall be posted in a conspicuous place in the transmitter control room in such a manner that all terms thereof are visible.

§ 3.565 *Operator requirements.* (a) One or more radio operators holding a valid radiotelephone first-class operator license, except as provided in this section, shall be in actual charge of the transmitting apparatus and shall be on duty either at the transmitter location or remote control point.

(b) A station which is authorized with transmitter power output of 10 kilowatts or less may be operated by persons holding commercial radio operator license of any class, except an aircraft radiotelephone operator authorization or a temporary limited radiotelegraph second-class operator license, when the equipment is so designed that the stability of the frequency is maintained by the transmitter itself within the limits of tolerance specified, and none of the operations, except those specified in subparagraphs (1), (2) and (3) of this paragraph, necessary to be performed during the course of normal operation may cause off-frequency operation or result in any unauthorized radiation. Adjustments of transmitting equipment by such operators, except when under the immediate supervision of radiotelephone first-class operator, shall be limited to the following:

(1) Those necessary to commence or terminate transmitter emissions as a routine matter.

(2) Those external adjustments that may be required as a result of variations of primary power supply.

(3) Those external adjustments which may be necessary to insure modulation within the limits required.

Should the transmitting apparatus be observed to be operating in a manner inconsistent with the station's instrument of authorization and none of the above adjustments are effective in bringing into proper operation, a person holding other than a radiotelephone first-class operator license and not acting under the immediate supervision of a radiotelephone first-class operator, shall be required to terminate the station's emissions.

(c) The licensee of a station which is operated by one or more operators holding other than a radiotelephone first-class operator license shall have one or more operators holding a radiotelephone first-class operator license in regular full-time employment at the station, whose primary duties shall be to effect and insure the proper functioning of the transmitting equipment. In the event that the licensee also operates a standard broadcast station in the same community, a regular full-time radiotelephone first-class operator or operators employed in connection with the FM broadcast station may concurrently be employed to satisfy the requirements of § 3.165 (c): *Provided,* That the duties of such operator or operators concerning the standard broadcast transmitting equipment shall in nowise interfere with the proper performance of his duties with respect to the FM broadcast transmitter: Except, that (1) if the transmitter power output is in excess of 10 watts but not greater than 1 kw, an operator holding radiotelephone second-class operator license may be on duty and perform the functions required of the radiotelephone first-class operator, or (2) if the transmitter power output is 10 watts or less, a radiotelephone second-class or radiotelegraph first- or second-class operator may be on duty and perform the functions of the radiotelephone first-class operator but need not be in regular full-time employment at the station.

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[4] Such as licensees maintaining 24-hour schedule and needing alternate operation for maintenance, or where developmental work requires alternate operation.

(d) The licensed operator on duty and in charge of a non-commercial educational FM broadcast transmitter may, at the discretion of the licensee, be employed for other duties or for the operation of another radio station or stations in accordance with the class of operator's license which he holds and the rules and regulations governing such other stations: *Provided, however,* That such duties shall in nowise interfere with the proper operation of the FM broadcast transmitter.

§ 3.566 *Facsimile broadcasting and multiplex transmission.* (a) Noncommercial educational FM broadcast stations may transmit simplex facsimile in accordance with transmission standards set forth in the Standards of Good Engineering Practice Concerning FM Broadcast Stations during periods not devoted to FM aural broadcasting. Such transmissions may not exceed one hour during the period between 7 a. m. and midnight (no limit is placed upon the hours between midnight and 7 a. m.) The Commission shall be notified by the licensee of the Noncommercial Educational FM broadcast station of its intent to transmit such facsimile.

(b) Noncommercial educational FM broadcast stations may, upon securing authorization from the Commission, transmit multiplex facsimile in accordance with transmission standards set forth in the Standards of Good Engineering Practice Concerning FM Broadcast Stations: *Provided,* That the transmission of such facsimile does not reduce the quality of the aural program simultaneously transmitted by the licensee below that required by the Standards of Good Engineering Practice Concerning FM Broadcast Stations and that no degradation of such aural programs will result from such facsimile transmissions when received on FM receivers not equipped with filters or other additional equipment.

§ 3.567 *Operating power; determination and maintenance of.* (a) The operating power of each station shall be determined by the indirect method. This is the product of the plate voltage (E_p) and the plate current (I_p) of the last radio stage, and an efficiency factor, F; that is:

$$\text{Operating power} = E_p \times I_p \times F$$

The efficiency factor, F, shall be established by the transmitter manufacturer for each type of transmitter for which Commission approval is requested, and shall be specified in the instruction books supplied to the customer with each transmitter. In the case of composite equipment the factor, F., shall be furnished to the Commission along with a statement of the basis used in determining such factor.

(b) The operating power of each station licensed for transmitter power output above 10 watts shall be maintained as near as practicable to the authorized power, and shall not exceed the limits of 5 percent above and 10 percent below the authorized power, except that in an emergency when it becomes impossible to operate with the authorized power, the station may be operated with reduced power for a period not to exceed 10 days provided the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified immediately after the emergency develops and also upon the resumption of normal operating power. With respect to each station licensed for transmitter power output of 10 watts or less, the power at which the station is operated may be less than the licensed power, but shall in no event be more than 5 percent above the licensed power. The transmitter of each station shall be so maintained as to be capable of operation at a maximum licensed power.

§ 3.568 *Modulation.* The percentage of modulation of all stations shall be maintained as high as possible consistent with good quality of transmission and good broadcast practice and in no case less than 85 percent or more than 100 percent on peaks of frequent recurrence during any selection which normally is transmitted at the highest level of the program under consideration.

§ 3.569 *Frequency tolerance.* (a) The center frequency of each noncommercial educational FM broadcast station licensed for transmitter power output of 10 watts or less shall be maintained within 3,000 cycles of the assigned center frequency.

(b) The center frequency of each noncommercial educational FM broadcast station licensed for transmitter power output above 10 watts shall be maintained within 2,000 cycles of the assigned center frequency.

§ 3.570 *Antenna structure, marking and lighting.* Where an antenna structure(s) is required to be painted or lighted see § 17.37, *Inspection of tower lights and associated control equipment;* § 17.39, *Cleaning and repainting;* § 17.40, *Time when lights shall be exhibited;* § 17.41, *Spare lamps;* and § 17.42, *Lighting equipment;* of Part 17 of this chapter (Construction, Marking and Lighting of Antenna Structures).

§ 3.571 *Discontinuance of operation.* The licensee of each station shall notify the Commission in Washington, D. C., and the Engineer in Charge of the radio district in which the station is located of permanent discontinuance of operation at least two days before operation is discontinued. The licensee shall, in addition, immediately forward the station license and other instruments of authorization to the Washington, D. C., office of the Commission for cancellation.

§ 3.572 *Remote control operation.* A station which is authorized with transmitter power output of 10 kilowatts or less may, upon prior authorization from the Commission, be operated by remote control at the point(s) which shall be specified in the station license. An application for authorization to operate by remote control may be made as a part of an application for construction permit or license or modification thereof by specifying the proposed remote control point(s). Operation by remote control shall be subject to the following conditions:

(a) The equipment at the operating and transmitting positions shall be so installed and protected that it is not accessible to or capable of operation by persons other than those duly authorized by the licensee.

(b) The control circuits from the operating position to the transmitter shall provide positive on and off control and shall be such that open circuits, short circuits, grounds or other line faults will not actuate the transmitter and any fault causing loss of such control will automatically place the transmitter in an inoperative condition.

(c) Control and monitoring equipment shall be installed so as to allow the licensed operator either at the remote control point or at the transmitter to perform all of the functions in a manner required by the Commission's rules and Standards: Except, that in the case of a station licensed for a transmitter output power of 10 watts or less the monitoring equipment shall be installed at the remote control point so as to continuously monitor the actual FM carrier and audibly indicate the nature and quality of the program being broadcast.

OTHER RULES RELATING TO OPERATION

§ 3.581 *Logs.* The licensee or permittee of each noncommercial educational FM broadcast station shall maintain program and operating logs and shall require entries to be made as follows:

(a) In the program log:

(1) An entry of the time each station identification announcement (call letters and location) is made.

(2) An entry briefly describing each program broadcast, such as "music," "drama," "speech," etc., together with the name or title thereof, with the time of the beginning and ending of the complete program. If a mechanical record is used, the entry shall show the exact nature thereof, such as "record," "transcription," etc., and the time it is announced. If the program is of network origin, its source shall be indicated. If the broadcast is under the auspices of an institution or organization other than the licensee, its name shall be noted.

(b) In the operating log:

(1) An entry of the time the station begins to supply power to the antenna, and the time it stops.

(2) An entry of the time the program service begins and ends.

(3) An entry of each interruption to the carrier wave, its cause and duration.

(4) For each station licensed for transmitter power output above 10 watts, an entry of the following each 30 minutes:

(i) Operating constants of last radio stage (total plate current and plate voltage).

(ii) Radio frequency transmission line meter reading.

(iii) Frequency monitor reading.

(5) A log must be kept of all operation during the experimental period. If the

entries required above are not applicable thereto, then the entries shall be made so as to fully describe the operation.

(c) Where an antenna structure(s) is required to be illuminated see § 17.38, *Recording of tower light inspections in the station record*, of Part 17 of this chapter (Construction, Marking and Lighting of Antenna Structures).

§ 3.582 *Logs; retention of.* Logs of noncommercial, educational FM broadcast stations shall be retained by the licensee or permittee for a period of two years, *Provided, however*, That logs involving communications incident to a disaster or which include communications incident to or involved in an investigation by the Commission and concerning which the licensee or permittee has been notified, shall be retained by the licensee or permittee until he is specifically authorized in writing by the Commission to destroy them; *Provided, further*, That logs incident to or involved in any claim or complaint of which the licensee or permittee has notice shall be retained by the licensee or permittee until such claim or complaint has been fully satisfied or until the same has been barred by statute limiting the time for the filing of suits upon such claims.

§ 3.583 *Logs; by whom kept.* Each log shall be kept by the person or persons competent to do so, having actual knowledge of the facts required, who shall sign the log when starting duty and again when going off duty. The logs shall be made available upon request by an authorized representative of the Commission.

§ 3.584 *Log form.* The log shall be kept in an orderly manner, in suitable form, and in such detail that the data required for the particular class of station concerned are readily available. Key letters or abbreviations may be used if proper meaning or explanation is contained elsewhere in the log.

§ 3.585 *Correction of logs.* No log or portion thereof shall be erased, obliterated, or willfully destroyed within the period of retention provided by the rules. Any necessary correction may be made only by the person originating the entry who shall strike out the erroneous portion, initial the correction made, and indicate the date of correction.

§ 3.586 *Rough logs.* Rough logs may be transcribed into condensed form, but in such case the original log or memoranda and all portions thereof shall be preserved and made a part of the complete log.

§ 3.587 *Station identification.* (a) A licensee of a noncommercial educational FM broadcast station shall make at least the following station identification announcements (call letters and location): (1) at the beginning and ending of each time of operation; and (2) within 2 minutes of each hour and each half hour during operation: *Provided*,

(b) Such identification announcement need not be made on the hour or half hour when to make such announcement would interrupt a single continuous program of longer duration than 30 minutes. In such cases the identification announcement shall be made at the beginning of the program, at the first interruption of the continuity, and at the conclusion of the program.

(c) In making the identification announcement, the call letters shall be given only on the channel of the station identified thereby.

§ 3.588 *Mechanical records.* Each program broadcast, except when designed specifically for in-school listening, which consists in whole or in part of one or more mechanical reproductions shall be announced in the manner and to the extent set out below.

(a) Each such program of longer duration than 30 minutes, consisting in whole or in part of one or more mechanical reproductions, shall be identified by appropriate announcement at the beginning of the program, at each 30-minute interval and at the conclusion of the program: *Provided, however*, That the identifying announcement at each 30-minute interval is not required in case of a mechanical reproduction consisting of a continuous uninterrupted speech, play, religious service, symphony concert, or operatic production of longer than 30 minutes.

(b) Each such program of a longer duration than 5 minutes and not in excess of 30 minutes, consisting in whole or in part of one or more mechanical reproductions, shall be identified by an appropriate announcement at the beginning and end of the program.

(c) Each such program of 5 minutes or less, consisting in whole or in part of mechanical reproductions, shall be identified by appropriate announcement immediately preceding the use thereof: *Provided, however*, That each such program of one minute or less need not be announced as such.

(d) In case a mechanical reproduction is used for background music, sound effects, station identification, program identification (theme music of short duration) or identification of the sponsorship of the program proper, no announcement of the mechanical reproduction is required.

(e) The exact form of identifying announcement is not prescribed, but the language shall be clear and in terms commonly used and understood. A licensee shall not attempt affirmatively to create the impression that any program being broadcast by mechanical reproduction consists of live talent.

§ 3.589 [Reserved.]

§ 3.590 *Broadcasts by candidates for public office*—(a) *Definitions.* A "legally qualified candidate" means any person who has publicly announced that he is a candidate for nomination by a convention of a political party or for nomination or election in a primary, special, or general election, municipal, county, state or national, and who meets the qualifications prescribed by the applicable laws to hold the office for which he is a candidate, so that he may be voted for by the electorate directly or by means of delegates or electors, and who—

(1) Has qualified for a place on the ballot or

(2) Is eligible under the applicable law to be voted for by sticker, by writing in his name on the ballot, or other method and (i) has been duly nominated by a political party which is commonly known and regarded as such, or (ii) makes a substantial showing that he is a bona fide candidate for nomination or office, as the case may be.

(b) *General requirements.* No station licensee is required to permit the use of its facilities by any legally qualified candidate for public office, but if any licensee shall permit any such candidate to use its facilities, it shall afford equal opportunities to all other such candidates for that office to use such facilities: *Provided*, That such licensee shall have no power of censorship over the material broadcast by any such candidate.

(c) *Practices.* No licensee shall make any discrimination in practices, regulations, facilities, or services for or in connection with the service rendered pursuant to this part, or make or give any preference to any candidate for public office or subject any such candidate to any prejudice or disadvantage; nor shall any licensee make any contract or other agreement which shall have the effect of permitting any legally qualified candidate for any public office to broadcast to the exclusion of other legally qualified candidates for the same public office.

(d) *Records; inspection.* Every licensee shall keep and permit public inspection of a complete record of all requests for broadcast time made by or on behalf of candidates for public office, together with an appropriate notation showing the disposition made by the licensee of such requests.

§ 3.591 *Rebroadcast.* (a) The term "rebroadcast" means reception by radio of the program[5] of a radio station, and the simultaneous or subsequent retransmission of such program by a broadcast station. The broadcasting of a program relayed by a remote pick-up broadcast station or studio transmitter link is not considered a rebroadcast. In case a program is transmitted from its point of origin to a broadcast station entirely by telephone facilities in which a section of such transmission is by radio, the broadcasting of this program is not considered a rebroadcast.

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[5] As used in this section, program includes any complete program or part thereof.

(b) The licensee of a noncommercial educational FM broadcast station may, without further authority of the Commission, rebroadcast the program of a United States standard, FM, noncommercial educational, or international broadcast station, provided the Commission is notified of the call letters of each station rebroadcast and the licensee certifies that express authority has been received from the licensee of the station originating the program.[6][7]

(c) No licensee of a noncommercial educational FM broadcast station shall rebroadcast the program of any United States radio station not designated in paragraph (b) of this section without written authority having first been obtained from the Commission upon application (informal) accompanied by written consent or certification of consent of the licensee of the station originating the program.[8]

Subpart D—Rules Governing Facsimile Broadcast Stations [Reserved]

Subpart E—Rules Governing Television Broadcast Stations

GENERAL

§ 3.601 *Scope of subpart.* This subpart contains the rules and regulations (including engineering standards) governing television broadcast stations, including noncommercial educational television broadcast stations in the United States, its Territories and possessions.

§ 3.602 *Other pertinent rules.* Other pertinent provisions of the Commission's rules and regulations relating to the television broadcast service are included in the following parts:

Part 1—Practice and procedure.

Part 2—Frequency allocations and radio treaty matters; general rules and regulations.

Part 4—Experimental and auxiliary broadcast services.

Part 17—Construction, marking, and lighting of antenna towers and/or their supporting structures.

§ 3.603 *Numerical designation of television channels.*

(a)

Channel No.	Frequency band (megacycles)	Channel No	Frequency band megacycles)
2	54-60	43	644-650
3	60-66	44	650-656
4	66-72	45	656-662
5	76-82	46	662-668
6	82-88	47	668-674
7	174-180	48	674-680
8	180-186	49	680-686
9	186-192	50	686-692
10	192-198	51	692-698
11	198-204	52	698-704
12	204-210	53	704-710
13	210-216	54	710-716
14	470-476	55	716-722
15	476-482	56	722-728
16	482-488	57	728-734
17	488-494	58	734-740
18	494-500	59	740-746
19	500-506	60	746-752
20	506-512	61	752-758
21	512-518	62	758-764
22	518-524	63	764-770
23	524-530	64	770-776
24	530-536	65	776-782
25	536-542	66	782-788
26	542-548	67	788-794
27	548-554	68	794-800
28	554-560	69	800-806
29	560-566	70	806-812
30	566-572	71	812-818
31	572-578	72	818-824
32	578-584	73	824-830
33	584-590	74	830-836
34	590-596	75	836-842
35	596-602	76	842-848
36	602-608	77	848-854
37	608-614	78	854-860
38	614-620	79	860-866
39	620-626	80	866-872
40	626-632	81	872-878
41	632-638	82	878-884
42	638-644	83	884-890

(b) In the Territory of Hawaii the frequency bands 76–82 Mc and 82–88 Mc are allocated for nonbroadcast use. These frequency bands (Channels 5 and 6) will not be assigned in the Territory of Hawaii for use by TV broadcast stations.

CHANNEL UTILIZATION

§ 3.606 *Table of assignments.* (a) The following table of assignments contains the channels assigned to the listed communities in the United States, its Territories, and possessions. Channels designated with an asterisk are assigned for use by noncommercial educational broadcast stations only. A station on a channel identified by a plus or minus mark is required to operate with its carrier frequencies offset 10 kc above or below, respectively, the normal carrier frequencies.

(b) *Table of assignments.*

	Channel No.
Alabama:	
Andalusia	29
Anniston	70+
Auburn	*56
Bessemer	54
Birmingham	6−, *10−, 13−, 42+, 48
Brewton	23+
Clanton	14
Cullman	60+
Decatur	23−
Demopolis	18
Dothan	9+, 19−
Enterprise	40+
Eufaula	44
Florence	41
Fort Payne	19
Gadsden	15+, 21+
Greenville	49−
Guntersville	40−
Huntsville	31+
Jasper	17
Alabama—Continued	
Mobile	5+, 10+, *42, 48+
Montgomery	12, 20, *26+, 32
Opelika	22−
Selma	58+
Sheffield	47−
Sylacauga	24−
Talladega	64
Thomasville	27−
Troy	38−
Tuscaloosa	45, 51−
Tuskegee	16−
University	*7
Arizona:	
Ajo	14−
Bisbee	15
Casa Grande	18−
Clifton	25−
Coolidge	30+
Douglas	3−
Eloy	24
Flagstaff	9, 13
Globe	34+
Holbrook	14
Kingman	6−
Mesa	12−
Miami	28+
Morenci	31
Nogales	17−
Phoenix	3+, 5−, *8+, 10−
Prescott	15
Safford	21
Tucson	4−, *6+, 9−, 18−
Williams	25
Winslow	16−
Yuma	11−, 13+
Arkansas:	
Arkadelphia	34+
Batesville	30−
Benton	40
Blytheville	64+, 74
Camden	50
Conway	62
El Dorado	10−, 26−
Fayetteville	*13−, 41−
Forrest City	22+
Fort Smith	5− *16, 22
Harrison	24
Helena	54−
Hope	15−
Hot Springs	9+, 52+
Jonesboro	8, 39+
Little Rock	*2−, 4, 11+, 17−, 23+
Magnolia	28+
Malvern	46
Morrilton	43−
Newport	28
Paragould	58−
Pine Bluff	7−, 36
Russellville	19
Searcy	33
Springdale	35−
Stuttgart	14+
California:	
Alturas	9
Bakersfield	10−, 29
Brawley	25+
Chico	12−
Corona	52
Delano	37+
El Centro	16
Eureka	3−, 13−
Fresno	12+, *18−, 24, 47, 53
Hanford	21
Los Angeles	2, 4, 5, 7, 9, 11, 13, 22, *28, 34
Madera	30+
Merced	34−
Modesto	14+
Monterey. (*See* Salinas.)	
Napa	62
Oakland. (*See* San Francisco.)	
Oxnard	32
Palm Springs	14
Petaluma	56
Port Chicago	15
Porterville	55
Red Bluff	16
Redding	7
Riverside	40, 46
Sacramento	3, *6, 10, 40−, 46+

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[6] The notice and certification of consent shall be given within 3 days of any single rebroadcast, but in case of the regular practice of rebroadcasting certain programs several times during a license period, notice and certification of consent shall be given for the ensuing license period with the application for renewal of license, or at the beginning of such rebroadcast practice if begun during a license period.

[7] See § 3.503 (c).

[8] By Order No. 82, dated and effective June 24, 1941, until further order of the Commission, § 3.591 (c) is suspended only insofar as it requires prior written authority of the Commission for the rebroadcasting of programs originated for the express purpose by U. S. Government radio stations.

	Channel No.
California—Continued	
Salinas-Monterey	8+, 28−
San Bernardino	18, *24−, 30
San Buenaventura	38−
San Diego	8, 10, *15+, 21−, 27, 33, 39
San Francisco-Oakland	2+, 4−, 5+ 7−, *9+, 20−, 26−, 32+, 38, 44−
San Jose	11+, 48, *54, 60
San Luis Obispo	6+
Santa Barbara	3−, 20, 26
Santa Cruz	16
Santa Maria	44
Santa Paula	16+
Santa Rosa	50
Stockton	13+, 36, *42
Tulare	27+
Ukiah	18
Visalia	43, 49
Watsonville	22−
Yreka City	11
Yuba City	52−
Colorado:	
Alamosa	19+
Boulder	*12, 22+
Canon City	36
Colorado Springs	11, 13, *17+, 23+
Craig	19
Delta	24−
Denver	2, 4−, *6−, 7, 9−, 20, 26+
Durango	6+, 15
Fort Collins	44+
Fort Morgan	15+
Grand Junction	5−, 21+
Greeley	50
La Junta	24
Lamar	18−
Leadville	14+
Longmont	32
Loveland	38
Montrose	10+, 18
Pueblo	3−, 5, *8, 28−, 34−
Salida	25
Sterling	25−
Trinidad	21−
Walsenburg	30−
Connecticut:	
Bridgeport	43−, 49−, *71
Hartford	3+, 18−, *24
Meriden	65−
New Britain	30+
New Haven	8+, 59+
New London	26+, 81
Norwalk. (*See* Stamford.)	
Norwich	57+, *63−
Stamford-Norwalk	27
Waterbury	53
Delaware:	
Dover	40
Wilmington	12, *59−, 83+
District of Columbia:	
Washington	4−, 5, 7+, 9−, 20+, *26−
Florida:	
Belle Glade	25−
Bradenton	28−
Clearwater	32+
Daytona Beach	2−
De Land	44+
Fort Lauderdale	17−, 23−
Fort Myers	11+
Fort Pierce	19
Gainesville	*5+, 20+
Jacksonville	4+, *7, 12−, 30+, 36−
Key West	14+, 20
Lake City	33+
Lakeland	16+, 22+
Lake Wales	14
Leesburg	26−
Marianna	17+
Miami	*2, 4, 7−, 10+, 27+, 33
Ocala	15+
Orlando	6−, 9, 18, *24−
Palatka	17
Panama City	7+, *30, 36+
Pensacola	3−, 15−, *21, 46
Quincy	54+
St. Augustine	25+
St. Petersburg. (*See* Tampa.)	
Sanford	35+
Sarasota	34+
Florida—Continued	
Tallahassee	*11−, 24, 51
Tampa-St. Petersburg	*3, 8−, 13−, 38
West Palm Beach	5, 12, *15, 21+
Georgia:	
Albany	10, 25
Americus	31
Athens	*8, 60−
Atlanta	2, 5−, 11+, *30, 36
Augusta	6+, 12+
Bainbridge	35−
Brunswick	28+, 34−
Cairo	45+
Carrollton	33
Cartersville	63−
Cedartown	53−
Columbus	4, 28, *34
Cordele	43
Dalton	25+
Douglas	32−
Dublin	15
Elberton	24+
Fitzgerald	23
Fort Valley	18+
Gainesville	52
Griffin	39+
La Grange	50
Macon	*41+, 47+
Marietta	57+
Milledgeville	51+
Moultrie	48−
Newnan	61+
Rome	9, 59
Savannah	3−, *9−, 11
Statesboro	22
Swainsboro	20−
Thomasville	6, 27
Tifton	14−
Toccoa	35
Valdosta	37+
Vidalia	26
Warner Robins	13+
Waycross	16
Idaho:	
Blackfoot	33
Boise	*4+, 7, 9−
Burley	15−
Caldwell	2
Coeur d'Alene	12−
Emmett	26−
Gooding	23
Idaho Falls	3, 8+
Jerome	17
Kellogg	33−
Lewiston	3−
Moscow	*15
Nampa	6, 12+
Payette	14+
Pocatello	6−, 10
Preston	41
Rexburg	27+
Rupert	21
Sandpoint	9+
Twin Falls	11, 13−
Wallace	27−
Weiser	20−
Illinois:	
Alton	48
Aurora	16
Belleville	54+
Bloomington	15−
Cairo	24−
Carbondale	34, *61−
Centralia	32+, 59+
Champaign-Urbana	3+, *12−, 21, 27, 33
Chicago	2−, 5, 7, 9+, *11, 20, 26, 32, 38, 44
Danville	24
Decatur	17, 23+
De Kalb	*67
Dixon	47+
Elgin	28+
Freeport	23
Galesburg	40−
Harrisburg	22
Jacksonville	29
Joliet	48+
Kankakee	14
Illinois—Continued	
Kewanee	60−
La Salle	35
Lincoln	53+
Macomb	61+
Marion	40
Mattoon	46−
Moline. (*See* Davenport, Iowa.)	
Mt. Vernon	38−
Olney	16−
Pekin	69+
Peoria	8, 19, *37−, 43+
Quincy	10−, 21+
Rockford	13+, 39+, *45+
Rock Island. (*See* Davenport, Iowa.)	
Springfield	2+, 20+, *26−
Streator	65−
Urbana. (*See* Champaign.)	
Vandalia	28−
Waukegan	22+
Indiana:	
Anderson	61
Angola	15+
Bedford	68
Bloomington	4, *30−, 36
Columbus	42−
Connersville	38+
Elkhart	52
Evansville	7, 50−, *56, 62
Fort Wayne	*27+, 33−, 69
Gary	50, *66
Hammond	56−
Indianapolis	6, 8−, 13−, *20−, 26+, 67−
Jasper	19+
Kokomo	31
Lafayette	47, 59
Lebanon	18
Logansport	51
Madison	25−
Marion	29+
Michigan City	62+
Muncie	49, 55+, *71
Princeton	52+
Richmond	32−
Shelbyville	58+
South Bend	34−, *40+, 46
Tell City	31−
Terre Haute	10, *57+, 63−
Vincennes	44+
Washington	60+
Iowa:	
Algona	37+
Ames	5, 25−
Atlantic	45−
Boone	19−
Burlington	32−, 38+
Carroll	39
Cedar Rapids	2, 9−, 20−, *26+
Centerville	31−
Charles City	18−
Cherokee	14
Clinton	64
Creston	43
Davenport-Rock Island-Moline, Ill.	4+, 6+, *30+, 36+, 42−
Decorah	44+
Des Moines	8−, *11+, 13−, 17+, 23−
Dubuque	56+, 62−
Estherville	24+
Fairfield	54
Fort Dodge	21
Fort Madison	50+
Grinnell	71
Iowa City	*12+, 24−
Keokuk	44−
Knoxville	33−
Marshalltown	49
Mason City	3+, 35−
Muscatine	58
Newton	65+
Oelwein	28
Oskaloosa	52+
Ottumwa	15+
Red Oak	32+
Shenandoah	20+
Sioux City	4−, 9, *30, 36−
Spencer	42+
Storm Lake	34+
Waterloo	7+, 16−, *22−
Webster City	27

	Channel No.
Kansas:	
Abilene	31+
Arkansas City	49
Atchison	60+
Chanute	50−
Coffeyville	33−
Colby	22−
Concordia	47−
Dodge City	6+, 23
El Dorado	55+
Emporia	39−
Fort Scott	27
Garden City	9, 11+
Goodland	31
Great Bend	2, 28
Hays	7−, 20−
Hutchinson	12, 18
Independence	20
Iola	44+
Junction City	29+
Larned	15−
Lawrence	*11, 17−
Leavenworth	54−
Liberal	14
McPherson	26−
Manhattan	*8, 23+
Newton	14+
Olathe	52−
Ottawa	21−
Parsons	46−
Pittsburg	7+, 38−
Pratt	36+
Salina	34
Topeka	13+, 42, *48+
Wellington	24−
Wichita	3−, 10−, 16−, *22+
Winfield	43+
Kentucky:	
Ashland	59−
Bowling Green	13, 17+
Campbellsville	40+
Corbin	16
Danville	35+
Elizabethtown	23
Frankfort	43−
Glasgow	28+
Harlan	36−
Hazard	19−
Hopkinsville	20
Lexington	27−, 64
Louisville	3−, 11+, *15, 21−, 41−, 51−
Madisonville	26
Mayfield	63
Maysville	24+
Middlesborough	57, 63+
Murray	33−
Owensboro	14−
Paducah	6+, 43
Pikeville	14−
Princeton	45−
Richmond	60
Somerset	29−
Winchester	37+
Louisiana:	
Abbeville	27+
Alexandria	5, 62+
Bastrop	53+
Baton Rouge	2, 28, *34, 40−
Bogalusa	69
Crowley	21+
De Ridder	14
Eunice	64−
Franklin	46+
Hammond	57
Houma	30+
Jackson	18−
Jennings	48
Lafayette	10, 38−, 67−
Lake Charles	7−, *19, 25
Minden	30
Monroe	8+, 43+
Morgan City	36+
Natchitoches	17+
New Iberia	15+
New Orleans	4+, 6+, *8, 20−, 26, 32+, 61
Oakdale	54+
Opelousas	58
Ruston	20
Shreveport	3−, 12
Louisiana—Continued	
Thibodaux	24
Winnfield	22−
Maine:	
Auburn	23+
Augusta	10−, 29+
Bangor	2−, 5−, *16−
Bar Harbor	22−
Bath	65
Belfast	41−
Biddeford	59
Calais	7, 20−
Dover-Foxcroft	18+
Fort Kent	17+
Houlton	24
Lewiston	8−, 17
Millinocket	14+
Orono	*12−
Portland	6+, 13+, *47−, 53+
Presque Isle	8, 19
Rockland	25−
Rumford	55−
Van Buren	15−
Waterville	35+
Maryland:	
Annapolis	14−
Baltimore	2+, 11−, 13+, 18, *24+, 60−
Cambridge	22+
Cumberland	17+
Frederick	62+
Hagerstown	52
Salisbury	16+
Massachusetts:	
Amherst	*82
Barnstable	52
Boston	*2+, 4−, 5, 7+, 44+, 50−, 56
Brockton	62
Fall River	46−, 68
Greenfield	42+
Holyoke. (*See* Springfield.)	
Lawrence	72
Lowell	32+
New Bedford	28−, 34+
North Adams	74+, *80
Northampton	36+
Pittsfield	64+
Springfield-Holyoke	55, 61
Worcester	14, 20
Michigan:	
Alma	41+
Alpena	9+, 30−
Ann Arbor	20+, *26−
Bad Axe	46−
Battle Creek	58−, 64−
Bay City	5−, 63−, *73+
Benton Harbor	42
Big Rapids	39
Cadillac	13−, 45
Calumet	13+
Cheboygan	4+, 36+
Coldwater	24−
Detroit	2+, 4, 7−, 50−, *56, 62
East Lansing	60+
East Tawas	25−
Escanaba	3+
Flint	12−, 16−, *22−, 28
Gladstone	40−
Grand Rapids	8+, *17+, 23−
Hancock	10−
Houghton	19
Iron Mountain	9, 27
Iron River	12−
Ironwood	31−
Jackson	48
Kalamazoo	3−, 36−
Lansing	6−, 54
Ludington	18+
Manistee	15−
Manistique	14+
Marquette	5+, 17
Midland	19+
Mount Pleasant	47−
Muskegon	29−, 35+
Petoskey	31
Pontiac	44+
Port Huron	34+
Rogers City	24
Saginaw	51−, 57
Sault Ste. Marie	8, 10+, 28−, *34
Traverse City	7+, 20−, *26+
West Branch	21
Minnesota:	
Albert Lea	57−
Alexandria	36
Austin	6−, 51+
Bemidji	24−
Brainerd	12
Cloquet	44
Crookston	21−
Detroit Lakes	18+
Duluth-Superior, Wis.	3, 6+, *8−, 32, 38
Ely	16
Fairmont	40+
Faribault	20
Fergus Falls	16−
Grand Rapids	20−
Hastings	29+
Hibbing	10+
International Falls	11
Little Falls	14+
Mankato	15−
Marshall	22+
Minneapolis-St. Paul	*2−, 4, 5−, 9+, 11−, 17, 23+
Montevideo	19
New Ulm	43−
Northfield	26
Owatonna	45
Red Wing	63
Rochester	10, 55−
St. Cloud	7, 33
St. Paul. (*See* Minneapolis.)	
Stillwater	39−
Thief River Falls	15
Virginia	26+
Wadena	27+
Willmar	31+
Winona	61
Worthington	32
Mississippi:	
Biloxi	13, *44+, 50−
Brookhaven	37+
Canton	16
Clarksdale	6, 32
Columbia	35+
Columbus	28−
Corinth	29−
Greenville	21−, 27
Greenwood	24+
Grenada	15
Gulfport	56−
Hattiesburg	9−, 17−
Jackson	3+, 12+, *19+, 25−, 47
Kosciusko	52−
Laurel	33−
Louisville	46−
McComb	31−
Meridian	11, 30−, *36−
Natchez	29+
Pascagoula	22
Picayune	14−
Starkville	34−
State College	*2+
Tupelo	38
University	*20+
Vicksburg	41+
West Point	8, 56+
Yazoo City	49
Missouri:	
Cape Girardeau	12, 18+
Carthage	56−
Caruthersville	27−
Chillicothe	14−
Clinton	49−
Columbia	8+, 16+, 22−
Farmington	52
Festus	14+
Fulton	24+
Hannibal	7−, 27+
Jefferson City	13, 33+
Joplin	12+, 30+
Kansas City	4, 5+, 9+, *19+, 25+, 65
Kennett	21
Kirksville	3−, 18
Lebanon	23
Marshall	40+
Maryville	26
Mexico	45
Moberly	35+
Monett	14
Nevada	18−
Poplar Bluff	15+

Missouri—Continued	*Channel No.*
Rolla	46
St. Joseph	2−, 30−, *36
St. Louis	4−, 5−, *9, 11−, 30, 36−, 42+
Sedalia	6−, 28+
Sikeston	37
Springfield	3+, 10, *26+, 32
West Plains	20−
Montana:	
Anaconda	2+
Billings	2, 8, *11
Bozeman	*9, 22−
Butte	4, 6+, *7−, 15+
Cut Bank	20+
Deer Lodge	25+
Dillon	20
Glasgow	16
Glendive	18−
Great Falls	3+, 5+, *23−
Hamilton	17+
Hardin	4+
Havre	9+, 11+
Helena	10+, 12
Kalispell	8−
Laurel	14+
Lewistown	13
Livingston	16−
Miles City	3−, *6, 10
Missoula	*11−, 13−, 21+
Polson	18
Red Lodge	18+
Shelby	14−
Sidney	14
Whitefish	16+
Wolf Point	20−
Nebraska:	
Alliance	13−, 21
Beatrice	40
Broken Bow	14−
Columbus	49+
Fairbury	35
Falls City	38
Fremont	52
Grand Island	11−, 21+
Hastings	5−, 27−
Kearney	13, 19
Lexington	23−
Lincoln	10+, 12−, *18+, 24
McCook	8−, 17
Nebraska City	50
Norfolk	33+
North Platte	2−, 4+
Omaha	3, 6+, 7, *16, 22, 28−
Scottsbluff	10−, 16+
York	15
Nevada:	
Boulder City	4+
Carlin	14
Carson City	37
Elko	10−
Ely	3−, 6+
Fallon	29−
Goldfield	5−
Hawthorne	31
Henderson	2−
Las Vegas	8−, *10+, 13−
Lovelock	18+
McGill	8+
Reno	4, 8, *21+, 27−
Tonopah	9−
Winnemucca	7+
Yerington	33
New Hampshire:	
Berlin	26
Claremont	37
Concord	27+
Durham	*11
Hanover	*21+
Keene	45−
Laconia	43
Littleton	24−
Manchester	9−, 48+
Nashua	54
Portsmouth	19+
Rochester	51
New Jersey:	
Andover	*69
Asbury Park	58
Atlantic City	46, 52+
Bridgeton	64−

New Jersey—Continued	*Channel No.*
Camden	*80
Freehold	*74
Hammonton	*70
Montclair	*77
Newark	13−
New Brunswick	*19−, 47+
Paterson	37+
Trenton	41+
Wildwood	48−
New Mexico:	
Alamogordo	17
Albuquerque	4+, *5+, 7+, 13+
Artesia	21+
Atrisco-Five Points	18+
Belen	24+
Carlsbad	6−, 23
Clayton	27−
Clovis	12+, 35
Deming	14+
Farmington	17−
Gallup	3, *8−, 10
Hobbs	46
Hot Springs	19
Las Cruces	22−
Las Vegas	14−
Lordsburg	23+
Los Alamos	20−
Lovington	27
Portales	22+
Raton	46−, *52
Roswell	*3+, 8, 10−
Santa Fe	2+, *9+, 11−
Silver City	*10+, 12
Socorro	15+
Tucumcari	25+
New York:	
Albany-Schenectady-Troy	6, *17+, 23−, 41
Amsterdam	52−
Auburn	37−
Batavia	33−
Binghamton	12−, 40−, *45+
Buffalo (*also see* Buffalo-Niagara Falls)	17, *23
Buffalo-Niagara Falls	2, 4−, 7+, 59
Cortland	56+
Dunkirk	46
Elmira	18+, 24−
Glens Falls	39+
Gloversville	29−
Hornell	50
Ithaca	*14+, 20−
Jamestown	58+
Kingston	66−
Malone	20+, *66
Massena	14−
Middletown	60
New York	2−, 4, 5+, 7, 9+, 11+, *25, 31−
Niagara Falls. (*See* Buffalo-Niagara Falls.)	
Ogdensburg	24+
Olean	54+
Oneonta	62−
Oswego	31
Patchogue	75
Plattsburg	28+
Poughkeepsie	21−, *83
Rochester	5−, 10+, 15−, *21, 27+
Rome (*See* Utica.)	
Saranac Lake	18
Schenectady (*also see* Albany)	35
Syracuse	3−, 8, *43+
Troy. (*See* Albany.)	
Utica-Rome	13, 19, *25+
Watertown	48
North Carolina:	
Ahoskie	53
Albemarle	20
Asheville	13−, *56−, 62+
Burlington	63
Burnsville	18
Chapel Hill	*4
Charlotte	3, 9+, 36+, *42+
Durham	11+, *40−, 46+
Elizabeth City	31+
Fayetteville	18−
Gastonia	48
Goldsboro	34
Greensboro	2−, *51−, 57−

North Carolina—Continued	*Channel No.*
Greenville	9
Henderson	52−
Hendersonville	27
Hickory	30−
High Point	15+
Jacksonville	16
Kannapolis	59+
Kinston	45
Laurinburg	41−
Lumberton	21+
Mount Airy	55
New Bern	13−
Raleigh	5−, *22−, 28−
Roanoke Rapids	30+
Rocky Mount	50
Salisbury	80
Sanford	38
Shelby	39
Southern Pines	49
Statesville	64−
Washington	7
Wilmington	6, 29−, *35+
Wilson	56
Winston-Salem	12, 26+, *32−
North Dakota:	
Bismarck	5, 12−, 18, *24
Bottineau	16+
Carrington	26−
Devils Lake	8+, 14−
Dickinson	2+, 4, *17
Fargo	6, 13−, *34−, 40
Grafton	17
Grand Forks	*2, 10
Harvey	22+
Jamestown	7−, 42
Lisbon	23
Minot	*6+, 10−, 13+
New Rockford	20+
Rugby	38−
Valley City	4−, 32−
Wahpeton	45+
Williston	8−, 11−, *34+
Ohio:	
Akron	49+, *55−, 61+
Ashtabula	15
Athens	62−
Bellefontaine	63
Bowling Green	*70
Cambridge	53
Canton	29
Chillicothe	56+
Cincinnati	5−, 9, 12, *48−, 54−, 74−
Cleveland	3, 5+, 8, 19, *25+, 65+
Columbus	4−, 6+, 10+, *34, 40−
Coshocton	20
Dayton	2, 7+, *16+, 22+
Defiance	43
Findlay	53
Fremont	59+
Gallipolis	18+
Hamilton-Middletown	65
Lancaster	28−
Lima	35−, 73
Lorain	31−
Mansfield	36+
Marion	17−
Massillon	23+
Middletown. (*See* Hamilton.)	
Mount Vernon	58
Newark	60−
Oxford	*14+
Piqua	44−
Portsmouth	30
Sandusky	42+
Springfield	52−, 76
Steubenville. (*See* Wheeling, W. Va.)	
Tiffin	47+
Toledo	11−, 13, *30+
Warren	67+
Youngstown	21−, 27, 73−
Zanesville	50+
Oklahoma:	
Ada	50+
Altus	36
Alva	30
Anadarko	58−
Ardmore	55−
Bartlesville	62−

	Channel No.
Oklahoma—Continued	
Blackwell	51—
Chickasha	64
Claremore	15
Clinton	32—
Duncan	39
Durant	27—
Elk City	12—, 15+
El Reno	56+
Enid	5, 21, *27+
Frederick	44
Guthrie	48
Guymon	20+
Hobart	23+
Holdenville	14—
Hugo	21+
Lawton	7+, *28+, 34—
McAlester	47
Miami	58+
Muskogee	8—, *45+, 66+
Norman	31—, *37—
Oklahoma City	4—, 9—, *13, 19+, 25—
Okmulgee	26
Pauls Valley	61
Ponca City	40—
Pryor Creek	54
Sapulpa	42—
Seminole	59
Shawnee	53—
Stillwater	29—, *69
Tulsa	2+, 6, *11—, 17+, 23
Vinita	28—
Woodward	8+
Oregon:	
Albany	55+
Ashland	14—
Astoria	30—
Baker	37+
Bend	15—
Burns	16
Corvallis	*7—, 49—
Eugene	*9+, 13, 20+, 26
Grants Pass	30
Klamath Falls	2—
La Grande	13+
Lebanon	43+
McMinnville	46—
Medford	4+, 5
North Bend	16+
Pendleton	28
Portland	6+, 8—, *10, 12, 21—, 27+
Roseburg	28+
Salem	3+, *18—, 24+
Springfield	37—
The Dalles	32
Pennsylvania:	
Allentown	39, 67
Altoona	10—, 19+, 25—
Bethlehem	51—
Bradford	70—
Butler	43—
Chambersburg	46—
Du Bois	31+
Easton	57—
Emporium	42—
Erie	12, 35+, *41—, 66+
Harrisburg	27—, 55+, 71+
Hazleton	63
Irwin	4+
Johnstown	6, 56—
Lancaster	8—, 21+
Lebanon	15+
Lewistown	38
Lock Haven	32—
Meadville	37
New Castle	45—
Oil City	64
Philadelphia	3, 6—, 10, 17—, 23+, 29, *35—
Pittsburgh	2—, 11, *13—, 16, 47—, 53+
Reading	33+, 61—
Scranton	16—, 22—, 73
Sharon	39+
State College	*44
Sunbury	65
Uniontown	14
Washington	63+
Wilkes-Barre	28, 34
Williamsport	36—
York	43, 49
Rhode Island:	
Providence	10+, 12+, 16, *22
South Carolina:	
Aiken	54—
Anderson	58—
Camden	14
Charleston	2+, 5, *13
Clemson	*68
Columbia	10—, *19+, 25—, 67+
Conway	23—
Florence	8—
Georgetown	27—
Greenville	4—, 23+, *29
Greenwood	21—
Lake City	55+
Lancaster	31—
Laurens	45—
Marion	43—
Newberry	70
Orangeburg	44—
Rock Hill	61—
Spartanburg	7+, 17—
Sumter	47
Union	65—
South Dakota:	
Aberdeen	9—, 17+
Belle Fourche	23+
Brookings	*8, 25
Hot Springs	17+
Huron	12+, 15+
Lead	5—, 26
Madison	46
Mitchell	5+, 20—
Mobridge	27—
Pierre	6—, 10+, *22+
Rapid City	7+, 15—
Sioux Falls	11, 13+, 38+, *44—
Sturgis	20
Vermillion	*2+, 41
Watertown	3—, 35+
Winner	18—
Yankton	17—
Tennessee:	
Athens	14+
Bristol, Tenn.-Bristol, Va.	5+, 46—
Chattanooga	3+, 12—, 43+, 49+, *55—
Clarksville	53
Cleveland	38+
Columbia	39—
Cookeville	24
Covington	19—
Dyersburg	46+
Elizabethton	40
Fayetteville	27+
Gallatin	48+
Harriman	67
Humboldt	25
Jackson	9—, 16+
Johnson City	11—, 34+
Kingsport	28
Knoxville	6, 10+, *20+, 26—
Lawrenceburg	50+
Lebanon	58
McMinnville	46
Maryville	51
Memphis	3, 5+, *10+, 13+, 42—, 48—
Morristown	54+
Murfreesboro	18—
Nashville	*2—, 4+, 8+, 30+, 36+
Oak Ridge	32+
Old Hickory	5
Paris	51+
Pulaski	44—
Shelbyville	62—
Springfield	42
Tullahoma	68—
Union City	55
Texas:	
Abilene	9+, 33—
Alice	34+
Alpine	12—
Amarillo	*2—, 4, 7, 10
Athens	25+
Austin	7+, 18—, 24, *70—
Ballinger	25
Bay City	33
Beaumont-Port Arthur	4— 6—, 31+, *37
Beeville	38—
Big Spring	4—
Texas—Continued	
Bonham	43
Borger	33
Brady	15—
Breckenridge	14+
Brenham	52—
Brownfield	15
Brownsville (*also see* Brownsville-Harlingen-Weslaco)	36
Brownsville-Harlingen-Weslaco[1]	4+, 5—
Brownwood	19
Bryan	54—
Childress	40
Cleburne	57
Coleman	21—
College Station	*3+, 48—
Conroe	20+
Corpus Christi	6+, 10—, *16+, 22
Corsicana	47+
Crockett	56
Crystal City	28+
Cuero	25—
Dalhart	16
Dallas	4+, 8, *13+, 23, 29, 73
Del Rio	16—
Denison	52
Denton	*2, 17
Eagle Pass	26
Edinburg	26—
El Campo	27
El Paso	4, *7, 9, 13, 20+, 26+
Falfurrias	52
Floydada	45
Fort Stockton	22
Fort Worth	5+, 10+, 20—, *26+
Gainesville	49—
Galveston	11+, 35—, 41—, *47—
Gonzales	64+
Greenville	69—
Harlingen (*also see* Brownsville-Harlingen-Weslaco)	23
Hebbronville	58
Henderson	42+
Hereford	19—
Hillsboro	63
Houston	2—, *8—, 13—, 23+, 29—, 39—
Huntsville	15
Jacksonville	36—
Jasper	49+
Kermit	14
Kilgore	59—
Kingsville	40
Lamesa	28
Lampasas	40—
Laredo	8, 13, *15+
Levelland	38—
Littlefield	32
Longview	32, 38+
Lubbock	5—, 11, 13—, *20, 26—
Lufkin	9, 46—
McAllen	20—
McKinney	65—
Marfa	19+
Marshall	16—
Mercedes	32
Mexia	50—
Midland	2+, 18
Mineral Wells	38
Mission	14
Monahans	9—
Mount Pleasant	35
Nacogdoches	40+
New Braunfels	62—
Odessa	7—, 24—
Orange	43—
Pampa	17—
Paris	33+
Pearsall	31
Pecos	16+
Perryton	22
Plainview	29+
Port Arthur. (*See* Beaumont.)	
Quanah	42
Raymondville	42
Rosenberg	17—
San Angelo	3—, 8+, 17+, *23—

[1] These assignments may be utilized in any community lying within the area of the triangle formed by Brownsville, Harlingen and Weslaco.

Texas—Continued	Channel No.
San Antonio	4, 5, *9−, 12+, 35+, 41+
San Benito	48
San Marcos	53+
Seguin	14−
Seymour	24+
Sherman	46+
Snyder	30+
Stephenville	32+
Sulphur Springs	41
Sweetwater	12
Taylor	58+
Temple	6, 16, 22+
Terrell	53
Texarkana	6+, *18, 24−
Tyler	7, 19−
Uvalde	20
Vernon	18+
Victoria	19+
Waco	11−, *28−, 34
Waxahachie	45−
Weatherford	51
Weslaco. (*See* Brownsville-Harlingen-Weslaco.)	
Wichita Falls	3, 6−, *16+, 22−
Utah:	
Brigham	36−
Cedar City	5
Logan	12−, 30, *46
Ogden	9+, *18−, 24
Price	6
Provo	11+, 22, *28
Richfield	13+
St. George	18+
Salt Lake City	2−, 4− 5+, *7−, 20+, 26
Tooele	44
Vernal	3+
Vermont:	
Bennington	33
Brattleboro	58−
Burlington	*16+, 22+
Montpelier	3, 40
Newport	46
Rutland	49+
St. Albans	34−
St. Johnsbury	30
Virginia:	
Blacksburg	*60+
Bristol. (*See* Bristol, Tenn.)	
Charlottesville	*45+, 64+
Covington	44+
Danville	24−
Emporia	25+
Farmville	19
Fredericksburg	47
Front Royal	39−
Harrisonburg	3−, 34−
Lexington	54
Lynchburg	13, 16−
Marion	50−
Martinsville	35−
Newport News. (*See* Norfolk-Portsmouth-Newport News.)	
Norfolk-Portsmouth (*also see* Norfolk-Portsmouth-Newport News)	27
Norfolk-Portsmouth-Newport News (*also see* Norfolk-Portsmouth)	3+, 10+, 15, *21−, 33
Norton	52+
Petersburg	8, 41
Portsmouth. (*See* Norfolk-Portsmouth and *also see* Norfolk, Portsmouth-Newport News.)	
Pulaski	37−
Richmond	6+, 12−, *23, 29+
Roanoke	7−, 10, 27+, *33−
South Boston	14+
Staunton	36
Waynesboro	42
Williamsburg	17
Winchester	28+
Washington:	
Aberdeen	58
Anacortes	34
Bellingham	12+, 18+, 24−
Bremerton	44, 50
Centralia	17
Ellensburg	49, *65
Ephrata	43
Everett	22−, 28−

Washington—Continued	Channel No.
Grand Coulee	37
Hoquiam	52
Kelso	39
Kennewick (*also see* Kennewick-Richland-Pasco)	25
Kennewick-Richland-Pasco	*41
Longview	33
Olympia	60
Omak-Okanogan	*35−
Okanogan. (*See* Omak.)	
Pasco (*also see* Kennewick-Richland-Pasco)	19−
Port Angeles	16−
Pullman	*10−, 24
Richland (*also see* Kennewick-Richland-Pasco)	31
Seattle	4, 5+, 7, *9, 20, 26+
Spokane	2−, 4−, 6+, *7+
Tacoma	11+, 13−, *56, 62
Walla Walla	5−, 8, *22
Wenatchee	*45, 55
Yakima	23+, 29+, *47
West Virginia:	
Beckley	6−, 21
Bluefield	41+
Charleston	8+, *43+, 49−
Clarksburg	12+, 22
Elkins	40+
Fairmont	35
Hinton	31
Huntington	3+, 13+, *53−
Logan	23−
Martinsburg	58−
Morgantown	*24
Parkersburg	15−
Welch	25
Weston	32
Wheeling (*also see* Wheeling-Steubenville, Ohio)	*57+
Wheeling-Steubenville, Ohio	7, 9+, 51+
Williamson	17
Wisconsin:	
Adams	*58+
Appleton	42+
Ashland	15+
Beaver Dam	37
Beloit	57
Chilton	*24+
Eau Claire	13, *19+, 25+
Fond du Lac	54+
Green Bay	2+, 6
Janesville	63+
Kenosha	61−
La Crosse	8+, *32+, 38−
Madison	3, *21−, 27−, 33+
Manitowoc	65
Marinette	11+, 32−, *38+
Milwaukee	4−, *10+, 12, 19−, 25, 31+
Oshkosh	48−
Park Falls	*18
Portage	17−
Prairie du Chien	34
Racine	49−, 55
Rhinelander	22
Rice Lake	21+
Richland Center	15, *66−
Sheboygan	59−
Shell Lake	*30−
Sparta	50−
Stevens Point	20+, 26−
Sturgeon Bay	44−
Superior. (*See* Duluth, Minn.)	
Wausau	7−, 16+, *46−
Wisconsin Rapids	14−
Wyoming:	
Buffalo	29
Casper	2+, 6+
Cheyenne	3, 5+
Cody	24−
Douglas	14
Evanston	14−
Gillette	31−
Green River	16
Greybull	40
Lander	17−
Laramie	*8+, 18+
Lovell	36+
Lusk	19−
Newcastle	28+

Wyoming—Continued	Channel No.
Powell	30+
Rawlins	11−
Riverton	10+
Rock Springs	13
Sheridan	9−, 12+
Thermopolis	15
Torrington	27
Wheatland	24+
Worland	34

U. S. TERRITORIES AND POSSESSIONS

Alaska:	
Anchorage	2−, *7−, 11−, 13−
Fairbanks	2+, 4+, 7+, *9+, 11+, 13+
Juneau	*3, 8, 10
Ketchikan	2, 4, *9
Seward	4−, 9−
Sitka	13
Hawaiian Islands:	
Hilo, Hawaii	2, *4, 7, 9, 11, 13
Honolulu, Oahu	2+, 4−, *7+, 9−, 11+, 13−
Lihue, Kauai	3+, *8−, 10+, 12−
Wailuku, Maui	3, 8, *10, 12
Puerto Rico:	
Arecibo	13+
Caguas	11−
Mayaguez	3+, 5−
Ponce	7+, 9−
San Juan	2+, 4−, *6+
Virgin Islands:	
Charlotte Amalie	10−, 12+
Christiansted	8+

§ 3.607 *Availability of channels.* (a) Subject to the provisions of paragraph (b) of this section, applications may be filed to construct television broadcast stations only on the channels assigned in the Table of Assignments and only in the communities listed therein. Applications which fail to comply with this requirement, whether or not accompanied by a petition to amend the table, will not be accepted for filing.

(b) A channel assigned to a community listed in the Table of Assignments is available upon application in any unlisted community which is located within 15 miles of the listed community. In addition, a channel assigned to a community listed in the Table of Assignments and not designated for use by noncommercial educational stations only, is available upon application in any other community within 15 miles thereof which, although listed in the Table, is assigned only a channel designated for use only by noncommercial educational stations. Where channels are assigned to two or more communities listed in combination in the Table of Assignments the provisions of this paragraph shall apply separately to each community so listed. The distance between communities shall be determined by the distance between the respective coordinates thereof as set forth in the publication of the United States Department of Commerce entitled "Air Line Distance Between Cities in the United States."[1] If said publication does not contain the coordinates of either or both communities, the coordinates of the main post office in either or both of such communities shall be used. The method to be followed in making the measurements is set forth in § 3.611 (d).

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[1] This publication may be purchased from the Government Printing Office, Washington, D. C.

§ 3.608 *International agreements.* Authorizations issued by the Commission for television broadcast facilities will be subject to the provisions of any agreements entered into by the United States with Canada and Mexico concerning television assignments and authorizations. Where, pursuant to such an agreement, timely objection is received from the foreign country involved to an authorization granted by the Commission, the Commission may, on its own motion, set aside such authorization pending consideration of such objection. Upon receipt of such objection, the Commission will notify the person to whom such authorization has been issued.

§ 3.609 [Reserved.]

§ 3.610 *Separations.* The following provisions relate to assignment separations and station separations. Petitions to amend the Table of Assignments (other than those also expressly requesting amendment of this subparagraph) will be dismissed and all applications for new television broadcast stations or for changes in the transmitter sites of existing stations will not be accepted for filing if they fail to comply with the requirements specified in the following paragraphs:[2]

(a) Minimum co-channel assignment and station separations:

(1)

Zone	Channels 2–13	Channels 14–83
	Miles	*Miles*
I	170	155
II	190	175
III	220	205

(i) Zone I consists of that portion of the United States located within the confines of the following lines drawn on the United States Albers Equal Area Projection Map (based on standard parallels 29½° and 45½°; North American datum): Beginning at the most easterly point on the State boundary line between North Carolina and Virginia; thence in a straight line to a point at the junction of the Ohio, Kentucky, and West Virginia State boundary lines; thence westerly along the southern boundary lines of the States of Ohio, Indiana and Illinois to a point at the junction of the Illinois, Kentucky and Missouri State boundary lines; thence northerly along the western boundary line of the State of Illinois to a point at the junction of the Illinois, Iowa, and Wisconsin State boundary lines; thence easterly along the northern State boundary line of Illinois to the 90th meridian; thence north along this meridian to the 43.5° parallel; thence east along this parallel to the 71st meridian; thence in a straight line to the intersection of the 69th meridian and the 45th parallel; thence east along the 45th parallel to the Atlantic Ocean. When any of the above lines pass through a city, the city shall be considered to be located in Zone I. (See Appendix I, Figure 1.)

(ii) Zone II consists of that portion of the United States which is not located in either Zone I or Zone III, and Puerto Rico, Alaska, Hawaiian Islands and the Virgin Islands.

(iii) Zone III consists of that portion of the United States located south of a line, drawn on the United States Albers Equal Area Projection Map (based on standard parallels 29½° and 45½°; North American datum), beginning at a point on the east coast of Georgia and the 31st parallel and ending at the United States-Mexican border, consisting of arcs drawn with a 150 mile radius to the north from the following specified points:

	North latitude	*West longitude*
(a)	29°40′00″	83°24′00″
(b)	30°07′00″	84°12′00″
(c)	30°31′00″	86°30′00″
(d)	30°48′00″	87°58′30″
(e)	30°05′00″	90°38′30″
(f)	30°04′30″	93°19′00″
(g)	29°46′00″	95°05′00″
(h)	28°43′00″	96°39′30″
(i)	27°52′30″	97°32′00″

When any of the above arcs pass through a city, the city shall be considered to be located in Zone II. (See Appendix I, Figure 2.)

(2) The minimum co-channel mileage separation between a station in one zone and a station in another zone shall be that of the zone requiring the lower separation.

(b) Minimum assignment and station adjacent channel separations applicable to all zones:

(1) Channels 2–13	Channels 14–83
60 miles	55 miles

(2) Due to the frequency spacing which exists between Channels 4 and 5, between Channels 6 and 7, and between Channels 13 and 14, the minimum adjacent channel separations specified above shall not be applicable to these pairs of channels (see § 3.603).

(c) In addition to the foregoing, the following* minimum assignment and station separations between stations on Channels 14–83, inclusive, must be met in either rulemaking proceedings looking towards the amendment of the Table of Assignments or in licensing proceedings. No channel listed in column (1) will be assigned to any city, and no application for an authorization to operate on such a channel will be granted unless the mileage separations indicated at the top of columns (2)–(7), inclusive, are met with respect to each of the channels listed in those columns and parallel with the channel in column (1).[3]

(d) The zone in which the transmitter of a television station is located or proposed to be located determines the applicable rules with respect to co-channel mileage separations where the transmitter is located in a different zone from that in which the channel to be employed is located.

§ 3.611 *Reference points and distance computations.* (a) In considering petitions to amend the Table of Assignments, the following reference points shall be used by the Commission in determining assignment separations between communities:

(1) Where transmitter sites for the pertinent channels have been authorized in communities involved in a petition to amend the Table of Assignments, separations between such communities shall be determined by the distance between the coordinates of the authorized transmitter sites in the respective communities as set forth in the Commission's authorizations therefor.

(2) Where an authorized transmitter site is available for use as a reference point in one community but not in the other for the pertinent channels, separations shall be determined by the distance between the coordinates of the transmitter site as set forth in the Commission's authorization therefor and the coordinates of the other community as set forth in the publication of the United States Department of Commerce entitled "Air Line Distances Between Cities in the United States." If said publication does not contain the coordinates for said other community, the coordinates of the main post office thereof shall be used.

(3) Where no authorized transmitter sites are available for use as reference points in both communities for the pertinent channels, the distance between the two communities listed in the above publication shall be used. If said publication does not contain such distance, the separation between the two communities shall be determined by the distance between the coordinates thereof as set forth in said publication. Where such coordinates are not contained in said publication, the coordinates of the main post offices of said communities shall be used.

(b) Station separations in licensing proceedings shall be determined by the distance between the coordinates of the proposed transmitter site in one community and

(1) The coordinates of an authorized transmitter site for the pertinent channel in the other community; or, where such transmitter site is not available for use as a reference point,

(2) The coordinates of the other community as set forth in the above-described publication of the United States Department of Commerce; or, if not contained therein,

(3) The coordinates of the main post office of such other community.

(4) In addition, where there are pending applications in other communities which, if granted, would have to be considered in determining station separations, the coordinates of the transmitter sites proposed in such applications must be used to determine whether the requirements with respect to minimum separations between the proposed stations in the respective cities have been met.

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[2] Licensees and permittees of television broadcast stations which were operating on April 14, 1952 pursuant to one or more separations below those set forth in § 3.610 may continue to so operate, but in no event may they further reduce the separations below the minimum. As the existing separations of such stations are increased, the new separations will become the required minimum separations until separations are reached which comply with the requirements of § 3.610. Thereafter, the provisions of said section shall be applicable.

*(See page 50.)

[3] The parenthetical reference beneath the mileage figures in columns 2 and 7, inclusive, indicate, in abbreviated form, the bases for the required mileage separations. For a discussion of these bases, see the "Sixth Report and Order" of the Commission (FCC 52–294). The hyphenated numbers listed in column (3) are both inclusive.

(1) Channel	(2) 20 miles (IF beat)	(3) 20 miles (inter modulation)	(4) 55 miles (adjacent channel)	(5) 60 miles (oscil-lator)	(6) 60 miles (sound image)	(7) 75 miles (picture image)
14	22	16–19	15	21	28	29
15	23	17–20	14, 16	22	29	30
16	24	14, 18–21	15, 17	23	30	31
17	25	14–15, 19–22	16, 18	24	31	32
18	26	14–16, 20–23	17, 19	25	32	33
19	27	14–17, 21–24	18, 20	26	33	34
20	28	15–18, 22–25	19, 21	27	34	35
21	29	16–19, 23–26	20, 22	28, 14	35	36
22	30, 14	17–20, 24–27	21, 23	29, 15	36	37
23	31, 15	18–21, 25–28	22, 24	30, 16	37	38
24	32, 16	19–22, 26–29	23, 25	31, 17	38	39
25	33, 17	20–23, 27–30	24, 26	32, 18	39	40
26	34, 18	21–24, 28–31	25, 27	33, 19	40	41
27	35, 19	22–25, 29–32	26, 28	34, 20	41	42
28	36, 20	23–26, 30–33	27, 29	35, 21	42, 14	43
29	37, 21	24–27, 31–34	28, 30	36, 22	43, 15	44, 14
30	38, 22	25–28, 32–35	29, 31	37, 23	44, 16	45, 15
31	39, 23	26–29, 33–36	30, 32	38, 24	45, 17	46, 16
32	40, 24	27–30, 34–37	31, 33	39, 25	46, 18	47, 17
33	41, 25	28–31, 35–38	32, 34	40, 26	47, 19	48, 18
34	42, 26	29–32, 36–39	33, 35	41, 27	48, 20	49, 19
35	43, 27	30–33, 37–40	34, 36	42, 28	49, 21	50, 20
36	44, 28	31–34, 38–41	35, 37	43, 29	50, 22	51, 21
37	45, 29	32–35, 39–42	36, 38	44, 30	51, 23	52, 22
38	46, 30	33–36, 40–43	37, 39	45, 31	52, 24	53, 23
39	47, 31	34–37, 41–44	38, 40	46, 32	53, 25	54, 24
40	48, 32	35–38, 42–45	39, 41	47, 33	54, 26	55, 25
41	49, 33	36–39, 43–46	40, 42	48, 34	55, 27	56, 26
42	50, 34	37–40, 44–47	41, 43	49, 35	56, 28	57, 27
43	51, 35	38–41, 45–48	42, 44	50, 36	57, 29	58, 28
44	52, 36	39–42, 46–49	43, 45	51, 37	58, 30	59, 29
45	53, 37	40–43, 47–50	44, 46	52, 38	59, 31	60, 30
46	54, 38	41–44, 48–51	45, 47	53, 39	60, 32	61, 31
47	55, 39	42–45, 49–52	46, 48	54, 40	61, 33	62, 32
48	56, 40	43–46, 50–53	47, 49	55, 41	62, 34	63, 33
49	57, 41	44–47, 51–54	48, 50	56, 42	63, 35	64, 34
50	58, 42	45–48, 52–55	49, 51	57, 43	64, 36	65, 35
51	59, 43	46–49, 53–56	50, 52	58, 44	65, 37	66, 36
52	60, 44	47–50, 54–57	51, 53	59, 45	66, 38	67, 37
53	61, 45	48–51, 55–58	52, 54	60, 46	67, 39	68, 38
54	62, 46	49–52, 56–59	53, 55	61, 47	68, 40	69, 39
55	63, 47	50–53, 57–60	54, 56	62, 48	69, 41	70, 40
56	64, 48	51–54, 58–61	55, 57	63, 49	70, 42	71, 41
57	65, 49	52–55, 59–62	56, 58	64, 50	71, 43	72, 42
58	66, 50	53–56, 60–63	57, 59	65, 51	72, 44	73 43
59	67, 51	54–57, 61–64	58, 60	66, 52	73 45	74 44
60	68, 52	55–58, 62–65	59, 61	67, 53	74, 46	75, 45
61	69, 53	56–59, 63–66	60, 62	68, 54	75, 47	76, 46
62	70, 54	57–60, 64–67	61, 63	69, 55	76, 48	77, 47
63	71, 55	58–61, 65–68	62, 64	70, 56	77, 49	78, 48
64	72, 56	59–62, 66–69	63, 65	71, 57	78, 50	79, 49
65	73, 57	60–63, 67–70	64, 66	72, 58	79, 51	80, 50
66	74, 58	61–64, 68–71	65, 67	73, 59	80, 52	81, 51
67	75, 59	62–65, 69–72	66, 68	74, 60	81, 53	82, 52
68	76, 60	63–66, 70–73	67, 69	75, 61	82, 54	83, 53
69	77. 61	64–67. 71–74	68, 70	76, 62	83, 55	54
70	78, 62	65–68 72–75	69, 71	77, 63	56	55
71	79, 63	66–69, 73–76	70, 72	78, 64	57	56
72	80, 64	67–70. 74–77	71, 73	79, 65	58	57
73	81, 65	68–71, 75 78	72, 74	80, 66	59	58
74	82, 66	69–72, 76–79	73, 75	81, 67	60	59
75	83, 67	70–73, 77–80	74, 76	82, 68	61	60
76	68	71–74, 78–81	75, 77	83, 69	62	61
77	69	72–75, 79–82	76, 78	70	63	62
78	70	73–76, 80–83	77, 79	71	64	63
79	71	74–77, 81–83	78, 80	72	65	64
80	72	75–78, 82–83	79, 81	73	66	65
81	73	76–79, 83	80, 82	74	67	66
82	74	77–80	81, 83	75	68	67
83	75	78–81	82	76	69	68

(c) In measuring assignment and station separations involving cities listed in the Table in combination, where there is no authorized transmitter site in any of the combination cities on the channel involved, separation measurements shall be made from the reference point which will result in the lowest separation.

(d) The distance between reference points is considered to be the length of the hypotenuse of a right triangle, one side of which is the difference in latitude of the reference points and the other side the difference in longitude of the two reference points, and shall be computed as follows: [4]

(1) Determine the difference in latitude and the difference in longitude between the two reference points. Convert these two differences into degrees and decimal parts of a degree in accordance with Appendix II, Table I.

(2) Determine the middle latitude of the two reference points to the nearest second of latitude (average the latitudes of the two points).

(3) Multiply the difference in latitude by the number of miles per degree of latitude difference obtained from Table II of Appendix II for the appropriate middle latitude (interpolate linearly).[5] [6] This determines the North-South distance in statute miles.

(4) Multiply the difference in longitude by the number of miles per degree of longitude difference obtained from Table III of Appendix II, for the appropriate middle latitude (interpolate linearly). This determines the East-West distance in statute miles.

(5) Determine the distance between the two reference points by the square root of the sum of the squares of the distances obtained in subparagraphs (3) and (4) of this paragraph, i. e.

$$D=(L_a^2+L_o^2)^{1/2}$$

Where:

D = Distance in statute miles

L_a = North-South distance in miles from (3) above

L_o = East-West distance in miles from (4) above

In computing the above, sufficient decimal figures shall be used to determine the distance to the nearest mile.

§ 3.612 *Protection from interference.* Permittees and licensees of television broadcast stations are not protected from any interference which may be caused by the grant of a new station or of authority to modify the facilities of an existing station in accordance with the provisions of this subpart. The nature and extent of the protection from interference accorded to television broadcast stations is limited solely to the protection which results from the minimum assignment and station separation requirements and the rules with respect to maximum powers and antenna heights set forth in this subpart.[7]

§ 3.613 *Main studio location.* (a) The main studio of a television broadcast station shall be located in the principal community to be served. Where the principal community to be served is a city, town, village or other political subdivision, the main studio shall be located within the corporate boundaries of such city, town, village or other political subdivision. Where the principal community to be served does not have specifically defined political boundaries, applications will be considered on a case-to-case basis in the light of the particular facts involved to determine whether the main studio is located within the principal community to be served.

(b) In cases where an adequate showing is made that there is good cause for locating a main studio outside the principal community to be served and that to do so would not be inconsistent with the operation of the station in the public interest, the Commission will permit the use of a main studio location other than that specified in paragraph (a) of this section. The licensee or permittee of a television broadcast station shall not move his main studio outside the principal community in which it is located without first securing a modification of construction permit or license. Such licensee or permittee shall notify the Commission promptly of any change of the location of the main studio within the community. In any case where the main studio is located outside the principal community to be served, the licensee or permittee of a television broadcast station shall not move his main studio without first securing a modification of construction permit or license.

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[4] This method is appropriate for determining distances up to 220 miles, and for such distances will normally be more accurate than using spherical trigonometry without correction for the spheroidal shape of the earth. However its accuracy deteriorates rapidly at distances beyond 300 miles and this method should not be used to compute greater distances.

[5] Tables II and III of Appendix II were computed from Clarke's Reference Spheroid of 1866.

[6] In determining necessary distance computations for the Territories, the appropriate mileage per degree may be obtained by linear interpolation of the data given on pages 122 and 123 of the tables in publication H. O. No. 9 (Bowditch-American Practical Navigator—1943 Edition) of the U. S. Navy Dept., Hydrographic Office. This publication may be purchased from the Government Printing Office, Washington, D. C.

[7] The nature and extent of the protection from interference accorded to television broadcast stations which were authorized prior to April 14, 1952, and which were operating on said date is limited not only as specified above but is further limited by any smaller separations existing between such stations on said date. Where, as a result of the adoption of the Table of Assignments, or of changes in transmitter sites made by such stations after said date, separations smaller than the required minimum are increased but still remain lower than the required minimum, protection accorded such stations will be limited to the new separations.

§ 3.614 *Power and antenna height requirements*—(a) *Minimum requirements.* Applications filed for television broadcast stations in cities in the population groupings set forth below will not be accepted for filing if they fail to comply with the following requirements as to power at the specified antenna heights above average terrain:

Population of city (excludes adjacent areas) (1950 census)	Minimum visual effective radiated power in db above 1 kilowatt (dbk.) for the antenna height shown
1,000,000 and above	17 dbk. (50 kw.)/500 ft. antenna
250,000 1,000,000	10 dbk. (10 kw.)/500 ft. antenna
50,000–250,000	3 dbk. (2 kw.)/500 ft antenna.
Under 50,000	0 dbk. (1 kw.)/300 ft. antenna.

No minimum antenna height is specified. Where antenna heights differ from those listed above, the Grade A field intensity coverage shall not be less than that resulting from the use of the minimum powers with the antenna heights shown above. Equivalent coverage shall be based on the chart designed as Appendix III, Figure 1; however, the effective radiated power may not exceed the figures specified in paragraph (b) of this section. In no event shall less than 0 dbk effective radiated power be authorized for any station.

(1) The minimum effective radiated power in any horizontal direction shall meet the minimum power requirements of this section and Appendix III, Figure 1.

(b) *Maximum power.* Except as provided in subparagraph (1) of this paragraph, the maximum effective radiated powers of television broadcast stations operating on the channels set forth below with antenna heights not in excess of 2,000 feet above average terrain shall be as follows:

Channel Nos.	Maximum visual effective radiated power in db. above one kloiwatt (dbk.)
2–6	20 dbk. (100 kw.).
7–13	25 dbk. (316 kw.).
14–83	30 dbk. (1000 kw.)

(1) In Zone I, on Channels 2–13, inclusive, the maximum powers specified above for these channels may be used only with antenna heights not in excess of 1,000 feet above average terrain. Where antenna heights exceeding 1,000 feet above average terrain are used on Channels 2–13, or antenna heights exceeding 2,000 feet above average terrain are used on Channels 14–83, the maximum power shall be based on the chart designated as Appendix III, Figure 2a.

(2) In Zones II and III, the maximum powers which may be used by television broadcast stations operating on the respective channels set forth in the above table with antenna heights exceeding 2,000 feet above average terrain shall be based on the chart designated as Appendix III, Figure 2b.

(3) The effective radiated power in any horizontal or vertical direction may not exceed the maximum values permitted by this section and Appendix III, Figures 2 (a) and 2 (b).

(4) The maximum effective radiated power in any direction above the horizontal plane shall be as low as the state of the art permits and may not exceed the effective radiated power in the horizontal direction in the same vertical plane.

(c) *Determination of applicable rules.* The zone in which the transmitter of a television station is located or proposed to be located determines the applicable rules with respect to maximum antenna heights and powers for VHF stations when the transmitter is located in Zone I and the channel to be employed is located in Zone II, or the transmitter is located in Zone II and the channel to be employed is located in Zone I.

§ 3.615 *Administrative changes in authorizations.* In the issuance of television broadcast station authorizations, the Commission will specify the transmitter output power and effective radiated power to the nearest 0.1 dbk. Powers specified by kilowatts shall be obtained by converting dbk to kilowatts to 3 significant figures. Antenna heights above average terrain will be specified to the nearest 10 feet. Midway figures will be authorized in the lower alternative.

APPLICATIONS AND AUTHORIZATIONS

§ 3.621 *Noncommercial educational stations.* In addition to the other provisions of this subpart, the following shall be applicable to noncommercial educational television broadcast stations:

(a) Except as provided in paragraph (b) of this section, noncommercial educational broadcast stations will be licensed only to nonprofit educational organizations upon a showing that the proposed stations will be used primarily to serve the educational needs of the community; for the advancement of educational programs; and to furnish a nonprofit and noncommercial television broadcast service.

(1) In determining the eligibility of publicly supported educational organizations, the accreditation of their respective state departments of education shall be taken into consideration.

(2) In determining the eligibility of privately controlled educational organizations, the accreditation of state departments of education or recognized regional and national educational accrediting organizations shall be taken into consideration.

(b) Where a municipality or other political subdivision has no independently constituted educational organization such as, for example, a board of education having autonomy with respect to carrying out the municipality's educational program, such municipality shall be eligible for a noncommercial educational television broadcast station. In such circumstances, a full and detailed showing must be made that a grant of the application will be consistent with the intent and purpose of the Commission's Rules relating to such stations.

(c) Noncommercial educational television broadcast stations may transmit educational, cultural and entertainment programs, and programs designed for use by schools and school systems in connection with regular school courses, as well as routine and administrative material pertaining thereto.

(d) An educational station may not broadcast programs for which a consideration is received, except programs produced by or at the expense of or furnished by others than the licensee for which no other consideration than the furnishing of the program is received by the licensee. The payment of line charges by another station or network shall not be considered as being prohibited by this paragraph.

(e) To the extent applicable to programs broadcast by a noncommercial educational station produced by or at the expense of or furnished by others than the licensee of said station, the provisions of § 3.654 relating to announcements regarding sponsored programs shall be applicable, except that no announcements (visual or aural) promoting the sale of a product or service shall be transmitted in connection with any program: *Provided, however,* That where a sponsor's name or product appears on the visual image during the course of a simultaneous or rebroadcast program either on the backdrop or in similar form, the portions of the program showing such information need not be deleted.

§ 3.622 *Applications for television stations.* Applications for new stations or for modifications of existing authorizations shall be filed on FCC Form 301; for licenses, on FCC Form 302; for renewal of licenses, on FCC Form 303. Separate applications shall be filed by each applicant for the voluntary sharing of television channels. Such applications shall be accompanied by copies of the time-sharing agreements under which the applicants propose to operate.

§ 3.623 *Full disclosures.* Applications shall contain full and complete disclosures with regard to the real party or parties in interest, and their legal, technical, financial, and other qualifications, and as to all matters and things required to be disclosed thereby.

§ 3.624 *Repetitious applications.* (a) Where an applicant has been afforded an opportunity to be heard with respect to a particular application for a new television broadcast station, or for change of existing service or facilities, and the Commission has, after hearing or default, denied the application or dismissed it with prejudice, the Commission will not consider another application for a station of the same class to serve in whole or in part the same area, by the same applicant or by his successor or assignee, or on behalf of or for the benefit of the original parties in interest, until after the lapse of 12 months from the effective date of the Commission's order.

(b) Where an appeal has been taken from the action of the Commission in denying a particular application, another application for the same class of broadcast station and for the same area, in whole or in part, filed by the same applicant or by his successor or asignee, or on behalf or for the benefit of the original parties in interest, will not be considered until the final disposition of such appeal.

§ 3.625 *Installation of apparatus.* Applications for construction permits or modification thereof involving the installation of new transmitting apparatus should be filed at least 60 days prior to the contemplated installation.

§ 3.626 *Period of construction.* Each construction permit will specify a maximum of 60 days from the date of granting thereof as the time within which construction of the station shall begin, and a maximum of 6 months thereafter as the time within which construction shall be completed and the station ready for operation, unless otherwise determined by the Commission upon proper showing in any particular case.

§ 3.627 *Forfeiture of construction permits; extension of time.* (a) A construction permit shall be automatically forfeited if the station is not ready for operation within the time specified therein or within such further time as the Commission may have allowed for completion, and a notation of the forfeiture of any construction permit under this provision will be placed in the records of the Commission as of the expiration date.

(b) An application (FCC Form 701) for extension of time within which to construct a station shall be filed at least 30 days prior to the expiration date of such permit if the facts supporting such application for extension are known to the applicant in time to permit such filing. In other cases, such applications will be accepted upon a showing satisfactory to the Commission of sufficient reasons for filing within less than 30 days prior to the expiration date. Such applications will be granted upon a specific and detailed showing that the failure to complete was due to causes not under the control of the grantee, or upon a specific and detailed showing of other matters sufficient to justify the extension.

(c) If a construction permit has been allowed to expire for any reason, application may be made for a new permit on FCC Form 321, "Application for Construction Permit to Replace Expired Permit."

§ 3.628 *Equipment tests.* (a) During the process of construction of a television broadcast station, the permittee, after notifying the Commission and Engineer in Charge of the radio district in which the station is located may, without further authority of the Commission, conduct equipment tests for the purpose of such adjustments and measurements as may be necessary to assure compliance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations.

(b) The Commission may notify the permittee to conduct no tests or may cancel, suspend, or change the date for the beginning of equipment tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Equipment tests may be continued so long as the construction permit shall remain valid.

(d) Inspection of a station will ordinarily be required during the equipment test period and before the commencement of program tests. After construction and after adjustments and measurements have been completed to show compliance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations, the permittee should notify the Engineer in Charge of the radio district in which the station is located that it is ready for inspection.

(e) The authorization for tests embodied in this section shall not be construed as constituting a license to operate but as a necessary part of construction.

§ 3.629 *Program tests.* (a) Upon completion of construction of a television broadcast station in accordance with the terms of the construction permit, the technical provisions of the application therefor, and the rules and regulations, and when an application for station license has been filed showing the station to be in satisfactory operating condition,[8] the permittee may request authority to conduct program tests: *Provided,* That such request shall be filed with the Commission at least ten (10) days prior to the date on which it is desired to begin such operation and that the Engineer in Charge of the radio district in which the station is located is notified.

(b) Program tests shall not commence until specific Commission authority is received. The Commission reserves the right to change the date of the beginning of such tests or to suspend or revoke the authority for program tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) Unless sooner suspended or revoked, the program test authority continues valid during Commission consideration of the application for license and during this period further extension of the construction permit is not required. Program test authority shall be automatically terminated by final determination upon the application for station license.

(d) All operation under program test authority shall be in strict compliance with the rules governing television broadcast stations and in strict accordance with representations made in the application for license pursuant to which the tests were authorized.

(e) The granting of program test authority shall not be construed as approval by the Commission of the application for station license.

~~§ 3.630 *Normal license period.* (a) All television broadcast station licenses will be issued for a normal license period of 1 year. Licenses will be issued to expire at the hour of 3:00 a. m., eastern standard time, in accordance with the following schedule.~~

~~(1) For stations located in Delaware, Pennsylvania, Tennessee, Kentucky, Indiana and Texas, August 1.~~

~~(2) For stations located in Maryland, District of Columbia, Virginia, West Virginia, Ohio, Michigan, Wyoming, Nevada, Arizona, Utah, New Mexico and Idaho, October 1.~~

~~(3) For stations located in North Carolina, South Carolina, Illinois, Wisconsin and California, December 1.~~

~~(4) For stations located in Florida, Puerto Rico, Virgin Islands, Iowa, Missouri, Washington, Oregon, Alaska, and Hawaii, February 1.~~

~~(5) For stations located in Alabama, Georgia, Minnesota, North Dakota, South Dakota, Montana, Colorado, Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont, April 1.~~

~~(6) For stations located in Arkansas, Louisiana, Mississippi, Kansas, Oklahoma, Nebraska, New Jersey and New York, June 1.~~

§ 3.631 *Renewal of license.* (a) Unless otherwise directed by the Commission, each application for renewal of a television station license shall be filed at least 90 days prior to the expiration date of the license sought to be renewed (FCC Form 303). No application for renewal of a television broadcast station will be considered unless there is on file with the Commission the information currently required by §§ 1.341–1.344 of this chapter, reference to which by date and file number shall be included in the application.

(b) Whenever the Commission regards an application for a renewal of a television station license as essential to the proper conduct of a hearing or investigation, and specifically directs that it be filed by a certain date, such application shall be filed within the time thus specified. If the licensee fails to file such application within the prescribed time, the hearing or investigation shall proceed as if such renewal application had been received.

§ 3.632 [Reserved.]

§ 3.633 *License, simultaneous modification and renewal.* When an application is granted by the Commission necessitating the issuance of a modified license less than 60 days prior to the expiration date of the license sought to be modified, and an application for renewal of said license is granted subsequent or prior thereto (but within 30 days of expiration of the present license), the modified license as well as the renewal license shall be issued to conform to the combined action of the Commission.

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[8] All data necessary to show compliance with the terms and conditions of the construction permit must be filed with the license application.

§ 3.634 *Assignment or transfer of control*—(a) *Voluntary.* Application for consent to voluntary assignment of a television station construction permit or license or for consent to voluntary transfer of control of a corporation holding a television station construction permit or license shall be filed with the Commission on FCC Form 314 (Assignment of License), FCC Form 315 (Transfer of Control) or FCC Form 316 (Short Form) at least 60 days prior to the contemplated effective date of assignment or transfer of control.

(b) *Pro forma.* Assignment or transfer application shall be filed on FCC Form 316 where:

(1) There is an assignment from an individual or individuals (including partnerships) to a corporation owned and controlled by such individuals or partnerships without any substantial change in their relative interests;

(2) There is an assignment from a corporation to its individual stockholders without effecting any substantial change in the disposition of their interests;

(3) There is an assignment or transfer by which certain partners or stockholders retire but no new ones are brought in, provided that the interest transferred is not a controlling one;

(4) There is a corporate reorganization which involves no substantial change in the beneficial ownership of the corporation;

(5) There is an involuntary transfer to an Executor, Administrator or other court appointed officer caused by death or legal disability, except that this form does not cover assignments (or transfers) from the Executor, Administrator or other court appointed officers to the ultimate beneficiary;

(6) There is an assignment or transfer from a corporation to a wholly owned subsidiary thereof or vice versa, or where there is an assignment from a corporation to a corporation owned or controlled by the assignor stockholders without substantial change in their interests;

(7) There is an assignment of less than a controlling interest in a partnership.

(c) *Involuntary.* In the event of the death or legal disability of a permittee or licensee, or a member of a partnership, or a person directly or indirectly in control of a corporation, which is a permittee or licensee:

(1) The Commission shall be notified in writing promptly of the occurrence of such death or legal disability, and

(2) Within 30 days after the occurrence of such death or legal disability, application on FCC Form 316 shall be filed for consent to involuntary transfer of control of such corporation to a person or entity qualified to succeed to the foregoing interests under the laws of the place having jurisdiction over the estate involved.

§ 3.635 *Use of common antenna site.* No television license or renewal of a television license will be granted to any person who owns, leases, or controls a particular site which is peculiarly suitable for television broadcasting in a particular area and (a) which is not available for use by other television licensees; and (b) no other comparable site is available in the area; and (c) where the exclusive use of such site by the applicant or licensee would unduly limit the number of television stations that can be authorized in a particular area or would unduly restrict competition among television stations.

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§ 3.636 *Multiple ownership.* (a) No person (including all persons under common control)[9] shall, directly or indirectly, own, operate, or control more than one television broadcast station that would serve substantially the same area as another television broadcast station owned, operated, or controlled by such person.

(b) No person (including all persons under common control) shall, directly or indirectly, own, operate, or control more than one television broadcast station, except upon a showing (1) that such ownership, operation, or control would foster competition among television broadcast stations or provide a television broadcasting service distinct and separate from existing services, and (2) that such ownership, operation, or control would not result in the concentration of control of television broadcasting facilities in a manner inconsistent with public interest, convenience, or necessity: *Provided, however,* That the Commission will consider the ownership, operation, or control of more than five television broadcast stations to constitute the concentration of control of television broadcasting facilities in a manner inconsistent with public interest, convenience, or necessity.

(c) Paragraphs (a) and (b) of this section are not applicable to noncommercial educational stations.

§ 3.637 *Alternate main transmitters.* The licensee of a television broadcast station may be licensed for alternate main transmitters provided that a technical need for such alternate transmitters is shown and that the following conditions are met:

(a) Both transmitters are located at the same place.

(b) Both transmitters shall have the same power rating.

(c) Both transmitters shall meet the construction, installation, operation and performance requirements of this subpart.

§ 3.638 *Auxiliary transmitter.* Upon showing that a need exists for the use of auxiliary transmitters in addition to the regular transmitters of a television station, a license therefor may be issued: *Provided,* That:

(a) Auxiliary transmitters may be installed either at the same location as the main transmitters or at another location.

(b) A licensed operator shall be in control whenever auxiliary transmitters are placed in operation.

(c) The auxiliary transmitters shall be maintained so that they may be put into immediate operation at any time for the following purposes:

(1) The transmission of the regular programs upon the failure of the main transmitters.

(2) The transmission of regular programs during maintenance or modification[10] work on the main transmitters necessitating discontinuance of their operation for a period not to exceed 5 days.

(3) Upon request by a duly authorized representative of the Commission.

(d) The auxiliary transmitters shall be tested at least once each week to determine that they are in proper operating condition and that they are adjusted to the proper frequency, except that in case of operation in accordance with paragraph (c) of this section during any week, the test in that week may be omitted provided the operation under paragraph (c) is satisfactory. A record shall be kept of the time and result of each test operation under paragraph (c).

(e) The auxiliary transmitters shall be equipped with satisfactory control equipment which will enable the maintenance of the frequency emitted by the station within the limits prescribed by the regulations in this subpart.

(f) The operating power of an auxiliary transmitter may be less than the authorized power of the main transmitters, but in no event shall it be greater than such power.

§ 3.639 *Changes in equipment and antenna system.* Licensees of television broadcast stations shall observe the following provisions with regard to changes in equipment and antenna system:

(a) No changes in equipment shall be made:

(1) That would result in the emission of signals outside of the authorized channel.

(2) That would result in the external performance of the transmitter being in disagreement with that prescribed in this subpart.

(b) Specific authority, upon filing formal application therefor (FCC Form 301 or such other form as is provided therefor), is required for any of the following changes:

(1) Changes involving an increase or decrease in the power rating of the transmitters.

(2) A replacement of the transmitters as a whole.

(3) Change in the location of the transmitting antenna.

(4) Change in antenna system, including transmission line.

(5) Change in the power delivered to the antenna.

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[9] The word "control" as used herein is not limited to majority stock ownership but includes actual working control in whatever manner exercised.

[10] This includes the equipment changes which may be made without authority as set forth elsewhere in the rules and regulations or as authorized by the Commission by letter or by construction permit. Where such operation is required for periods in excess of 5 days, request therefor shall be in accordance with § 1.324 of the Commission's rules.

(6) Change in frequency control and/or modulation system.

(c) Other changes, except as above provided for in this section or in the provisions of this subpart, may be made at any time without the authority of the Commission, provided that the Commission shall be promptly notified thereof and such changes shall be shown in the next application for renewal of license.

GENERAL OPERATING REQUIREMENTS

§ 3.651 *Time of operation.* (a) All television broadcast stations will be licensed for unlimited time operation. Each such station shall maintain a regular program operating schedule as follows: not less than 2 hours daily in any five broadcast days per week and not less than a total of 12 hours per week during the first 18 months of the station's operation; not less than 2 hours daily in any 5 broadcast days per week and not less than a total of 16 hours, 20 hours and 24 hours per week for each successive 6-month period of operation, respectively; and not less than 2 hours in each of the 7 days of the week and not less than a total of 28 hours per week thereafter. "Operation" includes the period during which a station is operated pursuant to special temporary authority or during program tests, as well as during the license period. Time devoted to test patterns, or to aural presentations accompanied by the incidental use of fixed visual images which have no substantial relationship to the subject matter of such aural presentations, shall not be considered in computing periods of program service. If, in the event of an emergency due to causes beyond the control of a licensee, it becomes impossible to continue operation, the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified in writing immediately after the emergency develops and immediately after the emergency ceases and operation is resumed.

(b) Noncommercial educational television broadcast stations are not required to operate on a regular schedule and no minimum number of hours of operation is specified; but the hours of actual operation during a license period shall be taken into consideration in considering the renewal of noncommercial educational television broadcast licenses.

(c) (1) The aural transmitter of a television station shall not be operated separately from the visual transmitter except for the following purposes:

(i) For actual tests of station equipment or actual experimentation in accordance with § 3.666; and

(ii) For emergency "fills" in case of visual equipment failure or unscheduled and unavoidable delays in presenting visual programs. In such situations the aural transmitter may be used to advise the audience of difficulties and to transmit for a short period program material of such nature that the audience will be enabled to remain tuned to the station; for example, music or news accompanying a test pattern or other visual presentation.

(2) During periods of transmission of a test pattern on the visual transmitter of a television station, aural transmission shall consist only of a single tone or series of variable tones. During periods when still pictures or slides are employed to produce visual transmissions which are accompanied by aural transmissions, the aural and visual transmissions shall be integral parts of a program or announcement and shall have a substantial relationship to each other: *Provided*, That nothing herein shall preclude the transmission of a test pattern, still pictures or slides for the following purposes and periods:

(i) To accompany aural announcements of the station's program schedule and aural news broadcasts or news commentaries, for a total period not to exceed one hour in any broadcast day.

(ii) To accompany aural transmissions for a period of time not to exceed fifteen minutes immediately prior to the commencement of a programming schedule.

Examples. (1) Duplication of AM or FM programs on the aural transmitter of a television station while the same program is broadcast on the visual transmitter (i. e., a "simulcast") is consistent with this paragraph.

(2) Duplication of AM or FM programs on the aural transmitter of a television station while a test pattern is broadcast on the visual transmitter is not consistent with this paragraph, except for the specific purposes and periods specified in paragraph (c) (2).

(3) A travel lecture in which the words of the lecturer are broadcast simultaneously with still pictures or slides of scenes illustrating the lecture, and a newscast in which the words of the newscaster are broadcast simultaneously with still pictures or slides of the news events, are examples of programs in which the aural and visual transmissions are integral parts of the same program having a substantial relationship to each other, within the meaning of paragraph (c) (2). Mood music unrelated to the visual transmission is not consistent with this paragraph.

(4) The broadcast of a test pattern accompanied by a musical composition for the purpose of demonstration, sale, installation or orientation of television receivers, or receiving antennas is not consistent with this paragraph.

(5) Music accompanying the transmission of a test pattern upon which is visually imposed a moving text consisting of continuous program material, such as a running newscast or news commentary, is consistent with this paragraph.

(6) Music accompanying the transmission of a test pattern upon which is visually imposed a clock indicating the time of day, or a text that is changed at spaced intervals, is not consistent with this paragraph.

§ 3.652 *Station identification.* (a) A licensee of a television broadcast station shall make station identification announcement (call letters and location) at the beginning and ending of each time of operation and during the operation on the hour. The announcement at the beginning and ending of each time of operation shall be by both aural and visual means. Other announcements may be by either aural or visual means.

(b) Identification announcements during operation need not be made when to make such announcement would interrupt a single consecutive speech, play, religious service, symphony concert, or any type of production. In such cases, the identification announcement shall be made at the first interruption of the entertainment continuity and at the conclusion thereof.

§ 3.653 *Mechanical reproductions.* (a) Each program which consists in whole or in part of one or more mechanical reproductions, either visual or aural, shall be accompanied by an appropriate announcement to that effect either at the beginning or end of such reproduction or at the beginning or end of the program in which such reproduction is used. No such announcement shall be required where a mechanical reproduction is used for background music, sound effects, station identification, program identification (theme music of short duration) or identification of sponsorship of the program proper.

(b) The exact form of identifying announcement is not prescribed but the language shall be clear and in terms commonly used and understood. The licensee shall not attempt affirmatively to create the impression that any program being broadcast by mechanical reproduction consists of live talent.

§ 3.654 *Sponsored programs, announcement.* (a) In the case of each program for the broadcasting of which money, services, or other valuable consideration is either directly or indirectly paid or promised to, or charged or received by, any television broadcast station, the station broadcasting such program shall make, or cause to be made, an appropriate announcement that the program is sponsored, paid for, or furnished, either in whole or in part.

(b) In the case of any political program or any program involving the discussion of public controversial issues for which any films, records, transcriptions, talent, scripts, or other material or services of any kind are furnished, either directly or indirectly, to a station as an inducement to the broadcasting of such program, an announcement shall be made both at the beginning and conclusion of such program on which such material or services are used that such films, records, transcriptions, talent, scripts, or other material or services have been furnished to such station in connection with the broadcasting of such program: *Provided, however*, That only one such announcement need be made in the case of any such program of 5 minutes' duration or less, which announcement may be made either at the beginning or conclusion of the program.

(c) The announcement required by this section shall fully and fairly disclose the true identity of the person or persons by whom or in whose behalf such payment is made or promised, or from whom or in whose behalf such services or other valuable consideration is received, or by whom the material or services referred to in paragraph (b) of this section are furnished. Where an agent or other person contracts or otherwise makes arrangements with a station on behalf of another, and such fact is known to the station, the announcement shall disclose the identity of the person or persons in whose behalf such agent is acting instead of the name of such agent.

(d) In the case of any program, other than a program advertising commercial products or services, which is sponsored, paid for or furnished, either in whole or in part, or for which material or services referred to in paragraph (b) of this section are furnished, by a corporation, committee, association or other unincorporated group, the announcement required by this section shall disclose the name of such corporation, committee, association or other unincorporated group. In each such case the station shall require that a list of the chief executive officers or members of the executive committee or of the board of directors of the corporation, committee, association or other unincorporated group shall be made available for public inspection at one of the television broadcast stations carrying the program.

(e) In the case of programs advertising commercial products or services, an announcement stating the sponsor's corporate or trade name or the name of the sponsor's product, shall be deemed sufficient for the purposes of this section and only one such announcement need be made at any time during the course of the program.

§ 3.655 *Rebroadcast.* (a) The term "rebroadcast" as used below means reception by radio of the program[11] of a television broadcast station, and the simultaneous or subsequent retransmission of such program by a broadcast station. The broadcasting of a program relayed by an auxiliary broadcast station licensed to the television broadcast station is not considered a rebroadcast.

(b) The licensee of a television broadcast station may, without further authority of the Commission, rebroadcast the program of a United States television broadcast station, provided the Commission is notified of the call letters of each station rebroadcast and the licensee certifies that express authority has been received from the licensee of the station originating the program.[12]

(c) No licensee of a television broadcast station shall rebroadcast the program of any United States radio station not designated in paragraph (b) of this section without written authority having first been obtained from the Commission upon application (informal) accompanied by written consent or certification of consent of the licensee of the station originating the program.[13]

§ 3.656 *Lotteries and give-away programs.*[14] (a) An application for construction permit, license, renewal of license, or any other authorization for the operation of a television broadcast station, will not be granted where the applicant proposes to follow or continue to follow policy or practice of broadcasting or permitting "the broadcasting of any advertisement of or information concerning any lottery, gift enterprise, or similar scheme, offering prizes dependent in whole or in part upon lot or chance, or any list of the prizes drawn or awarded by means of any such lottery, gift enterprise, or scheme, whether said list contains any part or all of such prizes." (See 18 U. S. C. sec. 1304.)

(b) The determination whether a particular program comes within the provisions of paragraph (a) of this section depends on the facts of each case. However, the Commission will in any event consider that a program comes within the provisions of paragraph (a) of this section if in connection with such program a prize consisting of money or thing of value is awarded to any person whose selection is dependent in whole or in part upon lot or chance, if as a condition of winning or competing for such prize:

(1) Such winner or winners are required to furnish any money or thing of value or are required to have in their possession any product sold, manufactured, furnished or distributed by a sponsor of a program broadcast on the station in question; or

(2) Such winner or winners are required to be listening to or viewing the program in question on a radio or television receiver; or

(3) Such winner or winners are required to answer correctly a question, the answer to which is given on a program broadcast over the station in question or where aid to answering the question correctly is given on a program broadcast over the station in question. For the purposes of this provision the broadcasting of the question to be answered over the television station on a previous program will be considered as an aid in answering the question correctly; or

(4) Such winner or winners are required to answer the phone in a prescribed manner or with a prescribed phrase, or are required to write a letter in a prescribed manner or containing a prescribed phrase, if the prescribed manner of answering the phone or writing the letter or the prescribed phrase to be used over the phone or in the letter (or an aid in ascertaining the prescribed phrase or the prescribed manner of answering the phone or writing the letter) is, or has been, broadcast over the station in question.

§ 3.657 *Broadcasts by candidates for public office*—(a) *Legally qualified candidate.* A "legally qualified candidate" means any person who has publicly announced that he is a candidate for nomination by a convention of a political party or for nomination or election in a primary, special, or general election, municipal, county, state or national, and who meets the qualifications prescribed by the applicable laws to hold the office for which he is a candidate, so that he may be voted for by the electorate directly or by means of delegates or electors, and who:

(1) Has qualified for a place on the ballot, or

(2) Is eligible under the applicable law to be voted for by sticker, by writing in his name on the ballot, or other method, and (i) has been duly nominated by a political party which is commonly known and regarded as such, or (ii) makes a substantial showing that he is a bona fide candidate for nomination or office, as the case may be.

(b) *General requirements.* No station licensee is required to permit the use of its facilities by any legally qualified candidate for public office, but if any licensee shall permit any such candidate to use its facilities, it shall afford equal opportunities to all other such candidates for that office to use such facilities: *Provided,* That such licensee shall have no power of censorship over the material broadcast by any such candidate.

(c) *Rates and practices.* The rates, if any, charged all such candidates for the same office shall be uniform and shall not be rebated by any means, directly or indirectly; no licensee shall make any discrimination in charges, practices, regulations, facilities, or services for or in connection with the service rendered pursuant to the regulations in this part, or make or give any preference to any candidate for public office or subject any such candidate to any prejudice or disadvantage; nor shall any licensee make any contract or other agreement which shall have the effect of permitting any legally qualified candidate for any public office to broadcast to the exclusion of other legally qualified candidates for the same public office.

(d) *Inspection of records.* Every licensee shall keep and permit public inspection of a complete record of all requests for broadcast time made by or on behalf of candidates for public office, together with an appropriate notation showing the disposition made by the licensee of such requests, and the charges made, if any, if request is granted.

§ 3.658 *Affiliation agreements*—(a) *Exclusive affiliation of station.* No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization[15] under which the station is prevented or hindered from, or penalized for, broadcasting the programs of any other network organization.

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[11] As used in this section, program includes any complete program or part thereof.

[12] The notice and certification of consent shall be given within 3 days of any single rebroadcast, but in case of the regular practice of rebroadcasting certain programs of a television broadcast station several times during a license period, notice and certification of consent shall be given for the ensuing license period with the application for renewal of license, or at the beginning of such rebroadcast practice if begun during a license period.

[13] By Order No. 82, dated and effective June 24, 1941, until further order of the Commission, § 3.655 (c) is suspended only insofar as it requires prior written authority of the Commission for the rebroadcasting of programs originated for that express purpose by U. S. Government radio stations.

[14] The Commission on September 21, 1949, adopted an order which read in part as follows:

"*It is ordered,* That, effective immediately, the effective date of §§ 3.192, 3.292, and 3.692 [now § 3.656] of the Commission's rules is hereby postponed until a date to be fixed by further order, which shall be at least thirty days after a final decision by the Supreme Court of the United States, or thirty days after the time within which an appeal to the Supreme Court may be taken has expired without such an appeal being taken, in pending litigation with respect to these rules."

[15] The term "network organization" as used herein includes national and regional network organizations. See ch. VII, J, of Report on Chain Broadcasting.

(b) *Territorial exclusivity.* No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which prevents or hinders another broadcast station serving substantially the same area from broadcasting the network's programs not taken by the former station, or which prevents or hinders another broadcast station serving a substantially different area from broadcasting any program of the network organization. This regulation shall not be construed to prohibit any contract, arrangement, or understanding between a station and a network organization pursuant to which the station is granted the first call in its area upon the programs of the network organization.

(c) *Term of affiliation.* No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which provides, by original terms, provisions for renewal, or otherwise for the affiliation of the station with the network organization for a period longer than 2 years: *Provided,* That a contract, arrangement, or understanding for a period up to 2 years may be entered into within 6 months prior to the commencement of such period.

(d) *Option time.* No license shall be granted to a television broadcast station which options[16] for network programs any time subject to call on less than 56 days' notice, or more time than a total of 3 hours[17] within each of four segments of the broadcast day, as herein described. The broadcast day is divided into four segments, as follows: 8 a. m. to 1 p. m.; 1 p. m. to 6 p. m.; 6 p. m. to 11 p. m.; 11 p. m. to 8 a. m.[18] Such options may not be exclusive as against other network organizations and may not prevent or hinder the station from optioning or selling any or all of the time covered by the option, or other time, to other network organizations.

(e) *Right to reject programs.* No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization which (1), with respect to programs offered pursuant to an affiliation contract, prevents or hinders the station from rejecting or refusing network programs which the station reasonably believes to be unsatisfactory or unsuitable; or which (2) with respect to network programs so offered or already contracted for, prevents the station from rejecting or refusing any program which, in its opinion, is contrary to the public interest, or from substituting a program of outstanding local or national importance.

(f) *Network ownership of stations.* No license shall be granted to a network organization, or to any person directly or indirectly controlled by or under common control[19] of a network organization, for a television broadcast station in any locality where the existing television broadcast stations are so few or of such unequal desirability (in terms of coverage, power, frequency, or other related matters) that competition would be substantially restrained by such licensing.

(g) *Dual network operation.* No license shall be issued to a television broadcast station affiliated with a network organization which maintains more than one network of television broadcast stations: *Provided,* That this section shall not be applicable if such networks are not operated simultaneously, or if there is no substantial overlap in the territory served by the group of stations comprising each such network.

(h) *Control by networks of station rates.* No license shall be granted to a television broadcast station having any contract, arrangement, or understanding, express or implied, with a network organization under which the station is prevented or hindered from, or penalized for, fixing or altering its rates for the sale of broadcast time for other than the network's programs.

§ 3.659 *Special rules relating to contracts providing for reservation of time upon sale of a station.* (a) No license, renewal of license, assignment of license, or transfer of control of a corporate licensee shall be granted or authorized to a television broadcast station which has a contract, arrangement or understanding, express or implied, pursuant to which, as consideration or partial consideration for the assignment of license or transfer of control, the assignor of a station license or the transferor of stock, where transfer of a corporate licensee is involved, or the nominee of such assignor or transferor retains any right of reversion of the license or any right to the reassignment of the license in the future, or reserves the right to use the facilities of the station for any period whatsoever.

(b) In the case of assignment of license or transfer of control of a corporate licensee approved by the Commission before the effective date of this section, February 15, 1949, involving a contract, arrangement or understanding of the type covered by paragraph (a) of this section and the existence and terms of which were fully disclosed to the Commission at the time of execution, the Commission will give consideration to the issuance of a license despite the existence of such contract, arrangement or understanding, if the parties thereto modify such contract within 6 months from the effective date of this section. Such modifications will be considered on the facts of each case but no such modification will be approved unless the modified contract contains at least the following provisions:

(1) A maximum limitation of the time subject to reservation so that no more than 12 hours per week shall be subject to reservation, of which no more than 4 hours shall be on any given day.

(2) A clause providing that the licensee reserves the right to reject or refuse programs which he reasonably believes to be unsatisfactory or unsuitable or for which, in his opinion, a program of outstanding local or national importance should be substituted, but provision may be made for the substitution of other television time for programs so rejected or for the payment at the station card rate for the time made unavailable.

(3) A prohibition against the resale or reassignment of any of the broadcast time reserved by such modified contract.

(4) An express negation of any right with respect to reversion or reassignment of license.

(5) An express provision setting forth a definite expiration date of the contract, arrangement or understanding. Such expiration date shall not extend beyond February 15, 1964, and shall in no event extend beyond the expiration date originally provided for in any such contract, agreement or understanding, in the event that such expiration date is a date prior to February 15, 1964.

(6) An express provision giving to the licensee the right to terminate the contract, arrangement or understanding for substantial cause, including, but not limited to, the assignment of license or the transfer of control of a corporate licensee, consistent disagreement over programs between the parties, or the acquisition of a network affiliation by the licensee, upon the payment of a lump sum or periodic payments, and providing that the amount initially fixed shall thereafter decrease as the amount of time reserved is decreased by performance of the contract. Any such payment should not be so unduly large as to constitute in practice an effective deterrent to the licensee exercising the right. In determining whether the amount is unduly large, the Commission will consider the amount by which consideration in return for the transfer of the station was decreased by reason of the reservation of time or the present value of the television time still reserved and unused as of the date of the exercise of the right of termination.

§ 3.660 *Station license, posting of.* The original of each station license shall be posted in the transmitter room.

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[16] As used in this section, an option is any contract, arrangement, or understanding, express or implied, between a station and a network organization which prevents or hinders the station from scheduling programs before the network agrees to utilize the time during which such programs are scheduled, or which requires the station to clear time already scheduled when the network organization seeks to utilize the time.

[17] All time options permitted under this section must be specified clock hours, expressed in terms of any time system set forth in the contract agreed upon by the station and network organization. Shifts from daylight saving to standard time or vice versa may or may not shift the specified hours correspondingly as agreed by the station and network organization.

[18] These segments are to be determined for each station in terms of local time at the location of the station but may remain constant throughout the year regardless of shifts from standard to daylight saving time or vice versa.

[19] The word "control" as used in this section, is not limited to full control but includes such a measure of control as would substantially affect the availability of the station to other networks.

§ 3.661 *Operator requirements.* One or more licensed radio-telephone first class operators shall be on duty at the place where the transmitting apparatus of each station is located and in actual charge thereof whenever it is being operated. The original license (or FCC Form 759) of each station operator shall be posted at the place where he is on duty. The licensed operator on duty and in charge of a television broadcast transmitter may, at the discretion of the licenseee, be employed for other duties or for the operation of another station or stations in accordance with the class of operator's license which he holds and by the rules and regulations governing such stations. However, such duties shall in nowise interfere with the operation of the broadcast transmitter.

§ 3.662 *Antenna structure, marking and lighting.* Where an antenna structure(s) is required to be painted or lighted see § 17.37, *Inspection of tower lights and associated control equipment;* § 17.39, *Cleaning and repainting;* § 17.40, *Time when lights shall be exhibited;* § 17.41, *Spare lamps;* and § 17.42, *Lighting equipment;* of Part 17 of this chapter (Construction, Marking and Lighting of Antenna Structures).

§ 3.663 *Logs; maintenance of.* The licensee or permittee of each television station shall maintain program and operating logs and shall require entries to be made as follows:

(a) In the program log:

(1) An entry of the time each station identification announcement (call letters and location) is made.

(2) An entry briefly describing each program broadcast, such as "music," "drama," "speech," etc., together with the name or title thereof and the sponsor's name, with the time of the beginning and ending of the complete program. If a mechanical reproduction, either visual or aural, is used, the entry shall show the exact nature thereof and the time it is announced as a mechanical reproduction. If a speech is made by a political candidate, the name and political affiliations of such speaker shall be entered.

(3) An entry showing that each sponsored program broadcast has been announced as sponsored, paid for, or furnished by the sponsor; or that the broadcast is under the auspices of a nonprofit educational organization other than the licensee or permittee.

(4) An entry showing, for each program of network origin, the name of the network originating the program.

(b) In the operating log:

(1) An entry of the time the station begins to supply power to the antenna, and the time it stops.

(2) An entry of the time the program begins and ends.

(3) An entry of each interruption to the carrier wave, its cause, and duration.

(4) An entry of the following each 30 minutes:

(i) Operating constants of last radio stage of the aural transmitter (total plate current and plate voltage).

(ii) Transmission line meter readings for both transmitters.

(iii) Frequency monitor readings.

(5) Log of experimental operation during experimental period (if regular operation is maintained during this period, the above logs shall be kept).

(i) A log must be kept of all operation during the experimental period. If the entries required above are not applicable thereto, then the entries shall be made so as to describe the operation fully.

(c) Where an antenna structure(s) is required to be illuminated see § 17.38, *Recording the tower light inspections in the station record,* of Part 17 of this chapter (Construction, Marking and Lighting of Antenna Structures).

§ 3.664 *Logs; retention of, etc.*—(a) *Logs; retention of.* Logs of television broadcast stations shall be retained by the licensee or permittee for a period of two years: *Provided, however,* That logs involving communications incident to a disaster or which include communications incident to or involved in an investigation by the Commission and concerning which the licensee or permittee has been notified, shall be retained by the licensee or permittee until he is specifically authorized in writing by the Commission to destroy them: *Provided further,* That logs incident to or involved in any claim or complaint of which the licensee or permittee has notice shall be retained by the licensee or permittee until such claim or complaint has been fully satisfied or until the same has been barred by statute limiting the time for the filing of suits upon such claims.

(b) *Logs, by whom kept.* Each log shall be kept by the person or persons competent to do so, having actual knowledge of the facts required, who shall sign the log when starting duty and again when going off duty. The logs shall be made available upon request by an authorized representative of the Commission.

(c) *Log form.* The log shall be kept in an orderly manner, in suitable form, and in such detail that the data required for the particular class of station concerned are readily available. Key letters or abbreviations may be used if proper meaning or explanation is contained elsewhere in the log.

(d) *Correction of logs.* No log or portion thereof shall be erased, obliterated, or wilfully destroyed within the period of retention provided by the rules. Any necessary correction may be made only by the person originating the entry who shall strike out the erroneous portion, initial the correction made, and indicate the date of correction.

(e) *Rough logs.* Rough logs may be transcribed into condensed form, but in such case the original log or memoranda and all portions thereof shall be preserved and made a part of the complete log.

§ 3.665 *Station inspection.* The licensee of a television broadcast station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 3.666 *Experimental operation.* Television broadcast stations may (upon informal application) conduct technical experimentation directed to the improvement of technical phases of operation and for such purposes may utilize a signal other than the standard television signal subject to the following conditions:

(a) That the licensee complies with the provisions of § 3.651 with regard to the minimum number of hours of transmission with a standard television signal.

(b) That no transmissions are radiated outside of the authorized channel and subject to the condition that no interference is caused to the transmissions of a standard television signal by other television broadcast stations.

(c) No charges either direct or indirect shall be made by the licensee of a television broadcast station for the production or transmission of programs when conducting technical experimentation.

§ 3.667 *Discontinuance of operation.* The licensee of each station shall notify the Commission in Washington, D. C., and the Engineer in Charge of the radio district where such station is located of permanent discontinuance of operation at least two days before operation is discontinued. The licensee shall, in addition, immediately forward the station license and other instruments of authorization to the Washington, D. C., office of the Commission for cancellation.

5

TECHNICAL STANDARDS 6PP

§ 3.681 *Definitions*—~~(a) *Amplitude modulation (AM).* A system of modulation in which the envelope of the transmitted wave contains a component similar to the wave form of the signal to be transmitted.~~

~~(b) *Antenna height above average terrain.* The average of the antenna heights above the terrain from two to ten miles from the antenna for the eight directions spaced evenly for each 45 degrees of azimuth starting with True North. (In general, a different antenna height will be determined in each direction from the antenna. The average of these various heights is considered the antenna height above the average terrain. In some cases less than 8 directions may be used. See § 3.684 (d)).~~

~~(c) *Antenna power gain.* The square of the ratio of the root-mean-square free space field intensity produced at one mile in the horizontal plane, in millivolts per meter for one kilowatt antenna input power to 137.6 mv/m. This ratio should be expressed in decibels (db). (If specified for a particular direction, antenna power gain is based on the field strength in that direction only.)~~

~~(d) *Aspect ratio.* The ratio of picture width to picture height as transmitted.~~

~~(e) *Aural transmitter.* The radio equipment for the transmission of the aural signal only.~~ See RB

(f) *Black level.* The magnitude of the modulating signal corresponding to the scanning of a black area in the transmitted picture.

~~(g) *Center frequency (aural).* (1) The average frequency of the emitted wave when modulated by a sinusoidal signal.~~

~~(2) The frequency of the emitted wave without modulation.~~

6PP

Blanking level etc.

(h) *Color field.* Scanning through the picture area once in the chosen scanning pattern and in each of the primary colors. In the line interlaced scanning pattern of two to one, the scanning of the alternate lines of the picture area once in each of the primary colors.

(i) *Color frame.* Scanning all of the picture area once in each of the primary colors. In the line interlaced scanning pattern of two to one, a color frame consists of two color fields.

(j) *Color transmission.* The transmission of color television signals which can be reproduced with different values of hue, saturation, and luminance.

(k) *Effective radiated power.* The product of the antenna input power and the antenna power gain. This product should be expressed in kilowatts and in decibels above one kilowatt (dbk). (If specified for a particular direction, effective radiated power is based on the antenna power gain in that direction only. The licensed effective radiated power is based on the average antenna power gain for each horizontal plane direction.)

(l) *Field.* Scanning through the picture area once in the chosen scanning pattern and in a single color. In the line interlaced scanning pattern of two to one, the scanning of the alternate lines of the picture area once in a single color.

(m) *Frame.* Scanning all of the picture area once in a single color. In the line interlaced scanning pattern of two to one, a frame consists of two fields.

(n) *Free space field intensity.* The field intensity that would exist at a point in the absence of waves reflected from the earth or other reflecting objects.

(o) *Frequency modulation (FM).* A system of modulation where the instantaneous radio frequency varies in proportion to the instantaneous amplitude of the modulating signal (amplitude of modulating signal to be measured after pre-emphasis, if used) and the instantaneous radio frequency is independent of the frequency of the modulating signal.

(p) *Frequency swing.* The instantaneous departure of the frequency of the emitted wave from the center frequency resulting from modulation.

(q) *Interlaced scanning.* A scanning process in which successively scanned lines are spaced an integral number of line widths, and in which the adjacent lines are scanned during successive cycles of the field frequency.

(r) *Monochrome transmission.* The transmission of television signals which can be reproduced in gradations of a single color only.

(s) *Negative transmission.* Where a decrease in initial light intensity causes an increase in the transmitted power.

(t) *Peak power.* The power over a radio frequency cycle corresponding in amplitude to synchronizing peaks.

(u) *Percentage modulation.* A applied to frequency modulation, the ratio of the actual frequency swing to the frequency swing defined as 100 percent modulation, expressed in percentage. For the aural transmitter of television broadcast stations, a frequency swing of ±25 kilocycles is defined as 100 percent modulation.

(v) *Polarization.* The direction of the electric field as radiated from the transmitting antenna.

(w) *Scanning.* The process of analyzing successively, according to a predetermined method, the light values of picture elements constituting the total picture area.

(x) *Scanning line.* A single continuous narrow strip of the picture area containing highlights, shadows, and halftones, determined by the process of scanning.

(y) *Standard television signal.* A signal which conforms to the television transmission standards.

(z) *Synchronization.* The maintenance of one operation in step with another.

(aa) *Television broadcast band.* The frequencies in the band extending from 54 to 890 megacycles which are assignable to television broadcast stations. These frequencies are 54 to 72 megacycles (channels 2 through 4), 76 to 88 megacycles (channels 5 and 6), 174 to 216 megacycles (channels 7 through 13), and 470 to 890 megacycles (channels 14 through 83).

(bb) *Television broadcast station.* A station in the television broadcast band transmitting simultaneous visual and aural signals intended to be received by the general public.

(cc) *Television channel.* A band of frequencies 6 megacycles wide in the television broadcast band and designated either by number or by the extreme lower and upper frequencies.

(dd) *Television transmission standards.* The standards which determine the characteristics of a television signal as radiated by a television broadcast station.

(ee) *Television transmitter.* The radio transmitter or transmitters for the transmission of both visual and aural signals.

(ff) *Vestigial sideband transmission.* A system of transmission wherein one of the generated sidebands is partially attenuated at the transmitter and radiated only in part.

(gg) *Visual frequency.* The frequency of the signal resulting from television scanning.

(hh) *Visual transmitter.* The radio equipment for the transmission of the visual signal only.

(ii) *Visual transmitter power.* The peak power output when transmitting a standard television signal.

6PP

§ 3.682 *Transmission standards and changes*—(a) *Transmission standards.* (1) The width of the television broadcast channel shall be six megacycles per second.

(2) The visual carrier shall be located 4.5 megacycles lower in frequency than the aural center frequency.

(3) The aural center frequency shall be located 0.25 megacycles lower than the upper frequency limit of the channel.

(4) The visual transmission amplitude characteristic shall be in accordance with the chart designated as Appendix III, Figure 3.

(5) For monochrome transmission the number of scanning lines per frame shall be 525, interlaced two to one in successive fields. The frame frequency shall be 30, the field frequency 60, and the line frequency 15,750 per second.

(6) For color transmissions the number of scanning lines per frame shall be 405, interlaced two to one in successive fields of the same color. The frame frequency shall be 72, the field frequency 144, the color frame frequency 24, the color field frequency 48, and the line frequency 29,160 per second.

(7) The aspect ratio of the transmitted television picture shall be 4 units horizontally to 3 units vertically.

(8) During active scanning intervals, the scene shall be scanned from left to right horizontally and from top to bottom vertically, at uniform velocities.

(9) A carrier shall be modulated within a single television channel for both picture and synchronizing signals, the two signals comprising different modulation ranges in amplitude, in accordance with the charts designated as Appendix III, Figures 3 and 4.

(10) A decrease in initial light intensity shall cause an increase in radiated power (negative transmission).

(11) The black level shall be represented by a definite carrier level, independent of light and shade in the picture.

(12) The pedestal level (normal black level) shall be transmitted at 75 percent (with a tolerance of plus or minus 2.5 percent) of the peak carrier level.

(13) The level at maximum luminance shall be 15% or less of the peak carrier level.

(14) The signals radiated shall have horizontal polarization.

(15) A radiated power of the aural transmitter not less than 50 percent nor more than 150 percent of the peak radiated power of the video transmitter shall be employed.

(16) Variation of output. The peak-to-peak variation of transmitter output within one frame of video signal due to all causes, including hum, noise, and low-frequency response, measured at both synchronizing peak and pedestal level, shall not exceed 5 percent of the average synchronizing peak signal amplitude.[20]

(17) Black level. The black level should be made as nearly equal to the pedestal as the state of the art will permit. If they are made essentially equal, satisfactory operation will result and improved techniques will later lead to the establishment of the tolerance if necessary.[21]

(18) Brightness characteristics. The transmitter output shall vary in substantially inverse logarithmic relation to the brightness of the subject. No tolerances are set at this time.[22]

(19) The color sequence for color transmission shall be repeated in the

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[20] [21] [22] These items are subject to change but are considered the best practice under the present state of the art. They will not be enforced pending a further determination thereof.

order red, blue, green, in successive fields.

(20) The transmitter color characteristics for color transmission shall be such as to reproduce the transmitted colors as correctly as the state of the art will permit on a receiver having the following trichromatic coefficients, based on the standardized color triangle of the International Commission on Illumination:

Red	Blue	Green
$x=0.674$ $y=0.326$	$x=0.122$ $y=0.142$	$x=0.227$ $y=0.694$

When equal amplitudes of red, blue, and green are transmitted, such a receiver will furnish a white corresponding to illuminant C with the trichromatic coefficients $x=0.310$ and $y=0.316$.

(b) *Changes in transmission standards.* The Commission will consider the question whether a proposed change or modification of transmission standards adopted for television would be in the public interest, convenience and necessity, upon petition being filed by the person proposing such change or modification, setting forth the following:

(1) The exact character of the change or modification proposed;

(2) The effect of the proposed change or modification upon all other transmission standards that have been adopted by the Commission for television broadcast stations;

(3) The experimentation and field tests that have been made to show that the proposed change or modification accomplishes an improvement and is technically feasible;

(4) The effect of the proposed change or modification in the adopted standards upon operation and obsolescence of receivers;

(5) The change in equipment required in existing television broadcast stations for incorporating the proposed change or modification in the adopted standards; and

(6) The facts and reasons upon which the petitioner bases his conclusion that the proposed change or modification would be in the public interest, convenience, and necessity.

Should a change or modification in the transmission standards be adopted by the Commission, the effective date thereof will be determined in the light of the considerations mentioned in subparagraph (4) of this paragraph.

§ 3.683 *Field intensity contours.* (a) In the authorization of television broadcast stations, two field intensity contours are considered. These are specified as Grade A and Grade B and indicate the approximate extent of coverage over average terrain in the absence of interference from other television stations. Under actual conditions, the true coverage may vary greatly from these estimates because the terrain over any specific path is expected to be different from the average terrain on which the field strength charts were based. The required field intensities, F (50, 50), in decibels above one microvolt per meter (dbu) for the Grade A and Grade B contours are as follows:[23]

	Grade A (dbu)	Grade B (dbu)
Channels 2–6	68	47
Channels 7–13	71	56
Channels 14–83	74	64

(b) The field intensity contours provided for herein shall be considered for the following purposes only:

(1) In the estimation of coverage resulting from the selection of a particular transmitter site by an applicant for a television station.

(2) In connection with problems of coverage arising out of application of § 3.636.

(3) In connection with problems of coverage arising out of application of § 3.658 (b).

(4) In determining compliance with § 3.685 (a) concerning the minimum field intensity to be provided over the principal community to be served.

§ 3.684 *Prediction of coverage.* (a) All predictions of coverage made pursuant to this paragraph shall be made without regard to interference and shall be made only on the basis of estimated field intensities. The peak power of the visual signal is used in making predictions of coverage.

(b) Predictions of coverage shall be made only for the same purposes as relate to the use of field intensity contours as specified in § 3.683 (b).

(c) In predicting the distance to the field intensity contours, the F (50, 50) field intensity charts (Appendix III, Figures 5 and 6) shall be used. If the 50 percent field intensity is defined as that value exceeded for 50 percent of the time, these F (50, 50) charts give the estimated 50 percent field intensities exceeded at 50 percent of the locations in decibels above one microvolt per meter. The charts are based on an effective power of one kilowatt radiated from a half-wave dipole in free space, which produces an unattenuated field strength at one mile of about 103 db above one microvolt per meter (137.6 millivolts per meter). To use the charts for other powers, the sliding scale associated with the charts should be trimmed and used as the ordinate scale. This sliding scale is placed on the charts with the appropriate gradation for power in line with the horizontal 40 db line on the charts. The right edge of the scale is placed in line with the appropriate antenna height gradations, and the charts then become direct reading (in uv/m and in db above 1 uv/m) for this power and antenna height. Where the antenna height is not one of those for which a scale is provided, the signal strength or distance is determined by interpolation between the curves connecting the equidistant points. Dividers may be used in lieu of the sliding scale. In predicting the distance to the Grade A and Grade B field intensity contours, the effective radiated power to be used is that in the horizontal plane in the pertinent direction. In predicting other field intensities over areas not in the horizontal plane, the effective radiated power to be used is the power in the direction of such areas; the appropriate vertical plane radiation pattern must, of course, be considered in determining this power.

(d) The antenna height to be used with these charts is the height of the radiation center of the antenna above the average terrain along the radial in question. In determining the average elevation of the terrain, the elevations between 2 and 10 miles from the antena site are employed. Profile graphs shall be drawn for 8 radials beginning at the antenna site and extending 10 miles therefrom. The radials should be drawn for each 45 degrees of azimuth starting with True North.[23a] [24] At least one radial must include the principal community to be served even though such community may be more than 10 miles from the antenna site. However, in the event none of the evenly spaced radials include the principal community to be served and one or more such radials are drawn in addition to the 8 evenly spaced radials, such additional radials shall not be employed in computing the antenna height above average terrain. Where the 2 to 10 mile portion of a radial extends in whole or in part over large bodies of water as specified in paragraph (e) of this section or extends over foreign territory but the Grade B intensity contour encompasses land area within the United States beyond the 10 mile portion of the radial, the entire 2 to 10 mile portion of the radial shall be included in the computation of antenna height above average terrain. However, where the Grade B contour does not so encompass United States land area and (1) the entire 2 to 10 mile portion of the radial extends over large bodies of water or foreign territory, such radial shall be completely omitted from the computation of antenna height above average terrain, and (2) where a part of the 2 to 10 mile portion of a radial extends over large bodies of water or over foreign territory, only that part of the radial extending from the 2 mile sector to the outermost portion of land area within the United States covered by the radial shall be employed in the computation of antenna height above average terrain. The profile graph for each radial should be plotted by contour intervals of from 40 to 100 feet and, where the data permits, at least 50 points of elevation (generally uniformly spaced) should be used for each radial. In instances of very rugged terrain where the use of contour intervals of 100 feet would result in several points in a short distance, 200- or 400-foot contour intervals may be used for such distances. On the other hand, where the terrain is uniform or gently sloping the smallest contour interval indicated on the topographic map (see below) should be used, although only relatively few points may be available. The profile graphs should indicate the topography accurately for each radial, and the graphs should be plotted with the distance in miles as the abscissa and the elevation in feet above mean sea level as the ordinate. The profile graphs should indicate the source of the topographical data employed. The graph should also show the elevation of the center of the radiating system. The graph may be plotted either on rectangular coordinate paper or on special paper which shows the curvature of the earth. It is not necessary to take the curvature of the earth into consideration in this procedure, as this factor is taken care of in the charts showing signal intensities. The average elevation of the 8-mile distance between 2 and 10 miles from the antenna site should then be determined from the profile graph for each radial. This may be obtained by averaging a large number of equally spaced points, by using a planimeter, or by obtaining the median elevation (that exceeded for 50 percent of the distance) in sectors and averaging those values.

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[23] It should be realized that the F (50, 50) curves when used for Channels 14–83 are not based on measured data at distances beyond about 30 miles. Theory would indicate that the field intensities for Channels 14–83 should decrease more rapidly with distance beyond the horizon than for Channels 2–6, and modification of the curves for Channels 14–83 may be expected as a result of measurements to be made at a later date. For these reasons, the curves should be used with appreciation of their limitations in estimating levels of field intensity. Further, the actual extent of service will usually be less than indicated by these estimates due to interference from other stations. Because of these factors, the predicted field intensity contours give no assurance of service to any specific percentage of receiver locations within the distances indicated. In licensing proceedings these variations will not be considered.

[23a] This paragraph does not apply to any application designated for hearing in which the engineering portions have been heard or the engineering exhibits exchanged prior to June 1, 1953, the effective date of the amendment of this subsection unless the subsection as amended would materially affect the outcome of the hearing.

[24] The Commission will, upon a proper showing by an existing station that the application of this rule will result in an unreasonable power reduction in relation to other stations in close proximity, consider requests for adjustment in power on the basis of a common average terrain figure for the stations in question as determined by the Commission.

(e) In instances where it is desired to determine the area in square miles within the Grade A and Grade B field intensity contours, the area may be determined from the coverage map by planimeter or other approximate means; in computing such areas, exclude (1) areas beyond the borders of the United States, and (2) large bodies of water, such as ocean areas, gulfs, sounds, bays, large lakes, etc., but not rivers.

(f) In cases where the terrain in one or more directions from the antenna site departs widely from the average elevation of the 2 to 10 mile sector, the prediction method may indicate contour distances that are different from what may be expected in practice. For example, a mountain ridge may indicate the practical limit of service although the prediction method may indicate otherwise. In such cases the prediction method should be followed, but a supplemental showing may be made concerning the contour distances as determined by other means. Such supplemental showing should describe the procedure employed and should include sample calculations. Maps of predicted coverage should include both the coverage as predicted by the regular method and as predicted by a supplemental method. When measurements of area are required, these should include the area obtained by the regular prediction method and the area obtained by the supplemental method. In directions where the terrain is such that negative antenna heights or heights below 100 feet for the 2 to 10 mile sector are obtained, a supplemental showing of expected coverage must be included together with a description of the method employed in predicting such coverage. In special cases, the Commission may require additional information as to terrain and coverage.

(g) In the preparation of the profile graphs previously described, and in determining the location and height above sea level of the antenna site, the elevation or contour intervals shall be taken from the United States Geological Survey Topographic Quadrangle Maps, United States Army Corps of Engineers maps or Tennessee Valley Authority maps, whichever is the latest, for all areas for which such maps are available. If such maps are not published for the area in question, the next best topographic information should be used. Topographic data may sometimes be obtained from State and municipal agencies. Data from Sectional Aeronautical Charts (including bench marks) or railroad depot elevations and highway elevations from road maps may be used where no better information is available. In cases where limited topographic data is available, use may be made of an altimeter in a car driven along roads extending generally radially from the transmitter site. Ordinarily the Commission will not require the submission of topographical maps for areas beyond 15 miles from the antenna site, but the maps must include the principal community to be served. If it appears necessary, additional data may be requested. United States Geological Survey Topographic Quadrangle Maps may be obtained from the Department of the Interior, Geological Survey, Washington, D. C. Sectional Aeronautical Charts are available from the Department of Commerce, Coast and Geodetic Survey, Washington, D. C.

§ 3.685 *Transmitter location and antenna system.* (a) The transmitter location shall be chosen so that, on the basis of the effective radiated power and antenna height above average terrain employed, the following minimum field intensity in decibels above one microvolt per meter (dbu) will be provided over the entire principal community to be served:

Channels 2–6	Channels 7–13	Channels 14–83
74 dbu	77 dbu	80 dbu

(b) Location of the antenna at a point of high elevation is necessary to reduce to a minimum the shadow effect on propagation due to hills and buildings which may reduce materially the intensity of the station's signals. In general, the transmitting antenna of a station should be located at the most central point at the highest elevation available. To provide the best degree of service to an area, it is usually preferable to use a high antenna rather than a low antenna with increased transmitter power. The location should be so chosen that line-of-sight can be obtained from the antenna over the principal community to be served; in no event should there be a major obstruction in this path. The antenna must be constructed so that it is as clear as possible of surrounding buildings or objects that would cause shadow problems. It is recognized that topography, shape of the desired service area, and population distribution may make the choice of a transmitter location difficult. In such cases, consideration may be given to the use of a directional antenna system, although it is generally preferable to choose a site where a non-directional antenna may be employed.

(c) In cases of questionable antenna locations it is desirable to conduct propagation tests to indicate the field intensity expected in the principal community to be served and in other areas, particularly where severe shadow problems may be expected. In considering applications proposing the use of such locations, the commission may require site tests to be made. Such tests should be made in accordance with the measurement procedure hereafter described, and full data thereon must be supplied to the Commission. Test transmitters should employ an antenna having a height as close as possible to the proposed antenna height, using a balloon or other support if necessary and feasible. Information concerning the authorization of site tests may be obtained from the Commission upon request.

(d) Present information is not sufficiently complete to establish "blanket areas" of television broadcast stations. A "blanket area" is that area adjacent to a transmitter in which the reception of other stations is subject to interference due to the strong signal from this station. The authorization of station construction in areas where blanketing is found to be excessive will be on the basis that the applicant will assume full responsibility for the adjustment of reasonable complaints arising from excessively strong signals of the applicant's station or take other corrective action.

(e) A directional antenna is considered to be an antenna that is designed or altered for the purpose of obtaining a noncircular radiation pattern. Directional antennas may not be used for the purpose of reducing minimum mileage separation requirements but may be employed for the purpose of improving service or for the purpose of using a particular site; however, directional antennas with a ratio of minimum to maximum radiation in the horizontal plane of more than 10 decibels will not be permitted.

(f) Applications proposing the use of directional antenna systems must be accompanied by the following:

(1) Complete description of the proposed antenna system.

(2) Orientation of array with respect to true north; time phasing of fields from elements (degrees leading or lagging); space phasing of elements (in feet and degrees); and ratio of fields from elements.

(3) Horizontal and vertical plane radiation patterns showing the free space field intensity in millivolts per meter at 1 mile and the effective radiated power, in dbk, for each direction. The method by which the radiation patterns were computed or measured shall be fully described, including formulas used, equipment employed, sample calculations and tabulations of data. Sufficient vertical plane patterns shall be included to indicate clearly the radiation characteristics of the antenna above and below the horizontal plane. The horizontal plane pattern shall be plotted on polar coordinate paper with reference to true north. The vertical plane patterns shall be plotted on rectangular coordinate paper with reference to the horizontal plane.

(4) Name, address, and qualifications of the engineer making the calculations.

(g) Applications proposing the use of television broadcast antennas within 200 feet of other television broadcast antennas operating on a channel within 20 percent in frequency of the proposed channel, or proposing the use of television broadcast antennas on Channels 5 or 6 within 200 feet of FM broadcast antennas, must include a showing as to the expected effect, if any, of such proximate operation.

(h) Where simultaneous use of antennas or antenna structures is proposed, the following provisions shall apply:

(1) In cases where it is proposed to use a tower of a standard broadcast station as a supporting structure for a television broadcast antenna, an appropriate application for changes in the radiating system of the standard broadcast station must be filed by the licensee thereof. A formal application (FCC Form 301) will be required if the proposal involves substantial change in the physical height or radiation characteristics of the standard broadcast antennas; otherwise an informal application will be acceptable.[25] An application may be required for other classes of stations when the tower is to be used in connection with a television station.

(2) When the proposed television antenna is to be mounted on a tower in the vicinity of a standard broadcast directional array and it appears that the operation of the directional antenna system may be affected, an engineering study must be filed with the television application concerning the effect of the television antenna on the directional pattern. Readjustment and field intensity measurements of the standard broadcast station may be required following construction of the television antenna.

(i) The provisions of Part 17 of this chapter shall govern the construction, marking and lighting requirements of antenna structures used by television broadcast stations. In the event a common tower is used by two or more licensees or permittees for antenna and/or antenna supporting purposes, the licensee or permittee who is owner of the tower shall assume full responsibility for the installation and maintenance of any painting and/or lighting requirements. In the event of shared ownership, one licensee or permittee shall assume such responsibility and advise the Commission accordingly.

§ 3.686 *Measurements for rule making purposes and upon request of the Commission.* (a) Except as provided for in § 3.612, television broadcast stations shall not be protected against any type of interference or propagation effect. Persons desiring to submit testimony, evidence, or data to the Commission for the purpose of showing that the technical standards contained in this subpart do not properly reflect any given types of interference or propagation effects may do so only in appropriate rule making proceedings to amend such technical standards. Persons making field intensity measurements for formal submission to the Commission in rule making proceedings, or making such measurements upon the request of the Commission, should comply with the procedure for making such measurements as outlined below.

(b) Measurements made to determine field intensities of television broadcast stations should be made with mobile equipment along roads which are as close and similar as possible to the radials showing topography which were submitted with the application for construction permit.[26] Suitable measuring equipment and a continuous recording device must be employed, the chart of which is either directly driven from the speedometer of the automobile in which the equipment is mounted or so arranged that distances and identifying landmarks can be readily noted. The measuring equipment must be calibrated against recognized standards of field intensity and so constructed that it will maintain an acceptable accuracy of measurement while in motion or when stationary. The equipment should be so operated that the recorder chart can be calibrated directly in field intensity in order to facilitate analysis of the chart. The receiving antenna must be horizontally polarized and should be nondirectional.

(c) Mobile measurements should be made with a minimum chart speed of 3 inches per mile and preferably 5 or 6 inches per mile. Locations shall be noted on the recorder chart as frequently as necessary to fix definitely the relation between the measured field intensity and the location. The time constant of the equipment should be such as to permit adequate analysis of the charts, and the time constant employed shall be shown. Measurements should be made to a point on each radial well beyond the particular contour under investigation.

(d) While making field intensity measurements either the visual or the aural transmitter may be used. If the visual transmitter is used, it is recommended that a black picture be transmitted or that the transmitter be operated at black level without synchronization peaks. Operation at a power somewhat less than black level is permissible but too great a reduction in power is not recommended due to the difficulty of recording weak signals. In any event, an appropriate factor shall be used to convert the readings obtained to the field strength that would exist on synchronization peaks while operating at the authorized power.

(e) After the measurements are completed, the recorder chart should be divided into not less than 15 sections on each equivalent radial from the station. The field intensity in each section of the chart should be analyzed to determine the field intensity received 50 percent of the distance (median field) throughout the section, and this median field intensity associated with the corresponding sector of the radial. The field intensity figures must be corrected for a receiving antenna elevation of 30 feet and for any directional effects of the automobile and receiving antenna not otherwise compensated. This data should be plotted for each radial, using log-log coordinate paper with distance as the abscissa and field intensity as the ordinate. A smooth curve should be drawn through these points (of median fields for all sectors) and this curve used to determine the distance to the desired contour. The distances obtained for each radial may then be plotted on the map of predicted coverage or on polar coordinate paper (excluding water areas, etc.) to determine the service and interference areas of a station.

(f) In certain cases the Commission may desire more information or recordings and in these instances special instructions will be issued.

(g) Data obtained in conjunction with field intensity measurements shall be submitted to the Commission in affidavit form in triplicate, including the following:

(1) Map or maps showing the roads or points where measurements were made, the service and/or interference areas determined by the prediction method and by the measurements, and any unusual terrain characteristics existing in these areas. The maps, preferably of a type showing topography in the area, should show the Grade A and Grade B field intensity contours.

(2) If a directional transmitting antenna is employed, a diagram on polar coordinate paper showing the predicted free space field intensity in millivolts per meter at 1 mile in all directions.

(3) A full description of the procedures and methods employed, including the type of equipment, the method of installation and operation, and calibration procedures.

(4) Complete data obtained during the survey, including calibration. (Only

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[25] In case of doubt, an informal application (letter) together with complete engineering data should be submitted.

[26] Cluster and spot measurements may also be submitted, if accompanied by a complete showing of the procedures employed.

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the original or one photostatic copy of the recording tapes, or representative samples, need be submitted.)

(5) Antenna system and power employed during the survey.

(6) Name, address, and qualifications of the engineer or engineers making the measurements.

§ 3.687 *Transmitters and associated equipment*—(a) *Visual transmitter.* (1) The over-all attenuation characteristics of the transmitter, measured in the antenna transmission line after the vestigial sideband filter (if used), shall not be greater than the following amounts below the ideal demodulated curve. (See Appendix III, Figure 7.)

2 db at 0.5 mc
2 db at 1.25 mc
3 db at 2.0 mc
6 db at 3.0 mc
12 db at 3.5 mc

The curve shall be substantially smooth between these specified points, exclusive of the region from 0.75 to 1.25 Mc.[27]

(2) The field strength or voltage of the lower sideband, as radiated or dissipated and measured as described in subparagraph (3) of this paragraph, shall not be greater than —20 db. for a modulating frequency of 1.25 Mc or greater. The field strength or voltage of the upper side band as radiated or dissipated and measured as described in subparagraph (3) of this paragraph, shall not be greater than —20 db. for a modulating frequency of 4.75 Mc or greater.[28]

(3) The attenuation characteristics of a visual transmitter shall be measured by application of a modulating signal to the transmitter input terminals in place of the normal composite television video signal. The signal applied shall be a composite signal composed of a synchronizing signal[29] to establish peak output voltage plus a variable frequency sine wave voltage occupying the interval between synchronizing pulses. The axis of the sine wave in the composite signal observed in the output monitor shall be maintained at an amplitude 0.5 of the voltage at synchronizing peaks. The amplitude of the sine wave input shall be held at a constant value. This constant value should be such that at no modulating frequency does the maximum excursion of the sine wave, observed in the composite output signal monitor, exceed the value 0.75 of peak output voltage. The amplitude of the 100-kilocycle sideband shall be measured and designated zero db as a basis for comparison. The modulation signal frequency shall then be varied over the desired range and the field strength or signal voltage of the corresponding sidebands measured. As an alternate method of measuring, in those cases in which the automatic d-c insertion can be replaced by manual control, the above characteristic may be taken by the use of a video sweep generator and without the use of pedestal synchronizing pulses. The d-c level shall be set for midcharacteristic operation.

(4) The radio frequency signal, as radiated, shall have an envelope as would be produced by a modulating signal in conformity with Appendix III, Figure 4, as modified by vestigial sideband operation specified by Appendix III, Figure 3.

(5) The time interval between the leading edges of successive horizontal pulses shall vary less than one-half of 1 percent of the average interval.

(6) The rate of change of the frequency of recurrence of the leading edges of the horizontal synchronizing signals shall not be greater than 0.15 percent per second, the frequency to be determined by an averaging process carried out over a period of not less than 20, nor more than 100 lines, such lines not to include any portion of the vertical blanking signal.

(7) Sufficient monitoring equipment shall be employed to determine whether the visual signal complies with the requirements of this subpart.

(b) *Aural transmitter.* (1) The transmitter shall operate satisfactorily with a frequency swing of ±25 kilocycles, which is considered 100 percent modulation. It is recommended, however, that the transmitter be designed to operate satisfactorily with a frequency swing of at least ±40 kilocycles.

(2) The transmitting system (from input terminals of microphone pre-amplifier, through audio facilities at the studio, through telephone lines or other circuits between studio and transmitter, through audio facilities at the transmitter, and through the transmitter, but excluding equalizers for the correction of deficiencies in microphone response) shall be capable of transmitting a band of frequencies from 50 to 15,000 cycles. Pre-emphasis shall be employed in accordance with the impedance-frequency characteristic of a series inductance-resistance network having a time constant of 75 microseconds. (See Appendix III, Figure 8.) The deviation of the system response from the standard pre-emphasis curve shall lie between two limits as shown by Appendix III, Figure 8. The upper of these limits shall be uniform (no deviation) from 50 to 15,000 cycles. The lower limit shall be uniform from 100 to 7,500 cycles, and three db below the upper limit; from 100 to 50 cycles the lower limit shall fall from three db limit at a uniform rate of one db per octave (4 db at 50 cycles); from 7,500 to 15,000 cycles the lower limit shall fall from three db limit at a uniform rate of two db per octave (5 db at 15,000 cycles).

(3) At any modulating frequency between 50 and 15,000 cycles and at modulation percentages of 25 percent, 50 percent, and 100 percent, the combined audio frequency harmonics measured in the output of the system shall not exceed the root-mean-square values given in the following table:

Modulation frequency	*Distortion (percent)*
50 to 100 cycles	3.5
100 to 7,500 cycles	2.5
7,500 to 15,000 cycles	3.0

(i) Measurement shall be made employing 75 microsecond de-emphasis in the measuring equipment and 75 microsecond pre-emphasis in the transmitting equipment, and without compression if a compression amplifier is employed. Harmonics shall be included to 30 kc.[30]

(ii) It is recommended that none of the three main divisions of the system (transmitter, studio to transmitter circuit, and audio facilities) contribute over one-half of these percentages, since at some frequencies the total distortion may become the arithmetic sum of the distortions of the divisions.

(4) The transmitting system output noise level (frequency modulation) in the band of 50 to 15,000 cycles shall be at least 55 db below the audio frequency level representing a frequency swing of ±25 kc.[31]

(5) The transmitting system output noise level (amplitude modulation) in the band of 50 to 15,000 cycles shall be at least 50 db below the level representing 100 percent amplitude modulation.[32]

(6) If a limiting or compression amplifier is employed, precaution should be maintained in its connection in the circuit due to the use of pre-emphasis in the transmitting system.

(7) A modulation monitor shall be in operation at the aural transmitter. The percentage of modulation of the aural transmissions shall be maintained as high as possible consistent with good quality of transmission and good broadcast practice and in no case less than 85 percent nor more than 100 percent on peaks of frequent recurrence during any selection which normally is transmitted at the highest level of the program under consideration.

(c) *Requirements applicable to both visual and aural transmitters.* (1) Automatic means shall be provided in the visual transmitter to maintain the carrier frequency within one kilocycle of the authorized frequency; automatic means shall be provided in the aural transmitter to maintain the carrier frequency within four kilocycles of the assigned aural carrier frequency or, alternatively, 4.5 megacycles above the actual visual carrier frequency within five kilocycles. When required by § 3.606, the visual and aural carrier frequencies are to be offset in frequency by 10 kilocycles (plus or minus, as indicated) from the normal carrier frequencies.

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[27] Output measurement shall be made with the transmitter operating into a dummy load of pure resistance and the demodulated voltage measured across this load. The ideal demodulated curve is that shown in Appendix III, Figure 7.

[28] Field strength measurements are desired. It is anticipated that these may not yield data which are consistent enough to prove compliance with the attenuation standards prescribed above. In that case, measurements with a dummy load of pure resistance, together with data on the antenna characteristics, shall be taken in place of over-all field measurements.

[29] The "synchronizing signal" referred to in this section means either a standard synchronizing wave form or any pulse that will properly set the peak.

[30] Measurements of distortion using de-emphasis in the measuring equipment are not practical at the present time for the range 7,500 to 15,000 cycles for 25 and 50 percent modulation. Therefore, measurements should be made at 100 percent modulation and on at least the following modulating frequencies: 50, 100, 400, 1,000, 5,000, 10,000, and 15,000 cycles. At 25 and 50 percent modulation, measurements should be made on at least the following modulating frequencies: 50, 100, 400, 1,000 and 5,000 cycles.

[31] [32] For the purpose of these measurements, the visual transmitter should be inoperative since the exact amount of noise permissible from that source is not known at this time.

(2) The transmitters shall be equipped with suitable indicating instruments for the determination of operating power and with other instruments necessary for proper adjustment, operation, and maintenance of the equipment.

(3) Adequate provision shall be made for varying the output power of the transmitters to compensate for excessive variations in line voltage or for other factors affecting the output power.

(4) Adequate provisions shall be provided in all component parts to avoid overheating at the rated maximum output powers.

(5) Frequency monitors for the visual and aural transmitters, independent of the frequency control of the transmitters, shall be in operation at the transmitters.

(6) In the event the visual monitoring equipment, the aural modulation monitor, or the visual or aural frequency monitor becomes defective, the station may be operated without such equipment pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission: *Provided*, That

(i) Appropriate entries shall be made in the operating log of the station to show the date and time the equipment was removed from and restored to service.

(ii) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the equipment is found to be defective and immediately after the repaired or replacement equipment has been installed and is functioning properly.

(iii) During the period when the station is operated without the aural modulation monitor or the visual monitoring equipment, the licensee shall provide other suitable means for insuring that the aural modulation is maintained within the tolerance prescribed in paragraph (b) (7) of this section and that the visual signal is maintained in accordance with the requirements of this subpart.

(iv) During the period when the station is operated without the visual or aural frequency monitor, the respective carrier frequency shall be compared with an external frequency source of known accuracy at sufficiently frequent intervals to insure that the frequency is maintained within the tolerance prescribed in subparagraph (1) of this paragraph. An entry shall be made in the station log as to the method used and the results thereof.

(v) If conditions beyond the control of the licensee or permittee prevent the restoration of the monitor or monitoring equipment to service within the above allowed period, an informal request in accordance with § 1.332 (d) of this chapter may be filed with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument or equipment.

(d) *Construction.* In general, the transmitters shall be mounted either on racks and panels or in totally enclosed frames protected as required by article 810 of the National Electrical Code,[33] and as set forth below:

(1) Means shall be provided for making all tuning adjustments, requiring voltages in excess of 350 volts to be applied to the circuit, from the front of the panels with all access doors closed.

(2) Proper bleeder resistors or other automatic means shall be installed across all the capacitor banks to lower any voltage which may remain accessible with access door open to less than 350 volts within two seconds after the access door is opened.

(3) All plate supply and other high voltage equipment, including transformers, filters, rectifiers and motor generators, shall be protected so as to prevent injury to operating personnel.

(i) Commutator guards shall be provided on all high voltage rotating machinery. Coupling guards should be provided on motor generators.

(ii) Power equipment and control panels of the transmitters shall meet the above requirements (exposed 220-volt A. C. switching equipment on the front of the power control panels is not recommended but is not prohibited).

(iii) Power equipment located at a television broadcast station not directly associated with the transmitters (not purchased as part of same), such as power distribution panels, are not subject to the provisions of this subpart.

(4) The following provisions shall be applicable to metering equipment:

(i) All instruments having more than 1,000 volts potential to ground on the movement shall be protected by a cage or cover in addition to the regular case. (Some instruments are designed by the manufacturers to operate safely with voltages in excess of 1,000 volts on the movement. If it can be shown by the manufacturer's rating that the instrument will operate safely at the applied potential, additional protection is not necessary.)

(ii) In case the plate voltmeters are located on the low potential side of the multiplier resistors with the high potential terminal of the instruments at or less than 1,000 volts above ground, no protective case is required. However, it is good practice to protect voltmeters subject to more than 5,000 volts with suitable over-voltage protective devices across the instrument terminals in case the winding opens.

(iii) Transmission line meters and any other radio frequency instrument which may be necessary for the operator to read shall be so installed as to be read easily and accurately without the operator having to risk contact with circuits carrying high potential radio frequency energy.

(e) *Wiring and shielding.* (1) The transmitter panels or units shall be wired in accordance with standard practice, such as insulated leads properly cabled and supported, coaxial cables, or rigid bus bar properly insulated and protected.

(2) Wiring between units of the transmitters, with the exception of circuits carrying radio frequency energy or video energy, shall be installed in conduits or approved fiber or metal raceways to protect it from mechanical injury.

(3) Circuits carrying radio frequency or video energy between units shall be coaxial cables, two wire balanced lines, or property shielded lines.

(4) All stages or units shall be adequately shielded and filtered to prevent interaction and radiation.

(5) The frequency and modulation monitors and associated radio frequency lines to the transmitter shall be thoroughly shielded.

(f) *Auxiliary transmitters.* Auxiliary transmitters may not exceed the power rating of the main transmitters. As a general guide, specifications for auxiliary transmitters should conform as much as possible to those of the main transmitters. No requirements are set forth at this time.

(g) *Installation.* (1) The installation of transmitting equipment shall be made in suitable quarters.

(2) Suitable facilities shall be provided for the welfare and comfort of the operator.

(h) *Spare tubes.* (1) A spare tube of every type employed in the transmitters and the frequency and modulation monitors shall be kept on hand at the equipment location. When more than one tube of any type is employed, the following table determines the number of spares of that type required:

Number of each type employed:	*Spares required*
1 or 2	1
3 to 5	2
6 to 8	3
9 or more	4

(2) An accurate circuit diagram and list of required spare tubes, as furnished by the manufacturer of the equipment, shall be supplied and retained at the transmitter location.

(i) *Operation.* (1) Spurious emissions, including radio frequency harmonics, shall be maintained at as low a level as the state of the art permits. As measured at the output terminals of the transmitter (including harmonic filters, if required) all emissions removed in frequency in excess of 3 Mc above or below the respective channel edge shall be attenuated no less than 60 db. below the visual transmitted power.[34] [35] In the event of interference caused to any service greater attenuation will be required.

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[33] The pertinent sections of article 810 of the National Electrical Code read as follows: "8191. General; Transmitters shall comply with the following:

"a. *Enclosing.* The transmitter shall be enclosed in a metal frame or grille, or separated from the operating space by a barrier or other equivalent means, all metallic parts of which are effectually connected to ground.

"b. *Grounding of controls.* All external metallic handles and controls accessible to the operating personnel shall be effectually grounded. No circuit in excess of 150 volts shall have any parts exposed to direct contact. A complete dead-front type of switchboard is preferred.

"c. *Interlocks on doors.* All access doors shall be provided with interlocks which will disconnect all voltages in excess of 350 volts when any access door is opened."

(*b*) If a limiting or compression amplifier is used in conjunction with the aural transmitter, due operating precautions should be maintained because of pre-emphasis in the transmitting system.

(j) *Studio equipment.* Studio equipment shall be subject to all the above requirements where applicable, except as follows:

(1) If properly covered by an underwriter's certificate, it will be considered as satisfying safety requirements.

(2) Section 8191 of article 810 of the National Electrical Code shall apply for voltages only in excess of 500 volts.

(3) No specific requirements are made relative to the design and acoustical treatment of studios. However, the design of studios, particularly the main studio, shall be compatible with the required performance characteristics of television broadcast stations.

§ 3.688 *Indicating instruments.* (a) Each television broadcast station shall be equipped with indicating instruments for measuring the direct plate voltage and current of the last radio stage of the visual and aural transmitters and the transmission line radio frequency current, voltage, or power of both transmitters; such instruments shall conform to the specifications therefor set forth in this subpart.

(b) The following requirements and specifications shall apply to indicating instruments used by television broadcast stations in compliance with paragraph (a) of this section:

(1) Length of scale shall be not less than $2\frac{3}{10}$ inches.

(2) Accuracy shall be at least 2 percent of the full scale reading.

(3) Scale shall have at least 40 divisions.

(4) Full scale reading shall be not greater than five times the minimum normal indication.

(5) No specifications are prescribed at this time regarding the peak indicating device required by § 3.689 (b).

(c) Any required instrument, the accuracy of which is questionable, shall not be employed. Repairs and calibration of instruments shall be made by the manufacturer, or by an authorized instrument repair service of the manufacturer, or by some other properly qualified or equipped instrument repair service. In any case, the repaired instrument must be supplied with a certificate of calibration.

(d) Recording instruments may be employed in addition to the indicating instruments to record the direct plate current and/or voltage to the last radio stage provided that they do not affect the operation of the circuits or accuracy of the indicating instruments. If the records are to be used in any proceeding before the Commission, as representative of operation, the accuracy must be the equivalent of the indicating instruments and the calibration shall be checked at such intervals as to insure the retention of such accuracy.

(e) The function of each instrument used in the equipment shall be clearly and permanently shown on the instrument itself or on the panel immediately adjacent thereto.

(f) In the event that any one of the indicating instruments required by paragraph (a) of this section becomes defective when no substitute which conforms with the required specifications is available, the station may be operated without the defective instrument pending its repair or replacement for a period not in excess of 60 days: *Provided*, that—

(1) Appropriate entries shall be made in the operating log of the station, showing the date and time the meter was removed from and restored to service.

(2) The Engineer in Charge of the radio district in which the station is located shall be notified both immediately after the instrument is found to be defective and immediately after the repaired or replacement instrument has been installed and is functioning properly.

(3) If the defective instrument is a plate voltmeter or plate ammeter in the last radio stage, the operating power shall be maintained by means of the radio frequency transmission line meter.

(4) If conditions beyond the control of the licensee prevent the restoration of the meter to service within the above allowed period, informal request may be filed in accordance with § 1.332 (d) of this chapter with the Engineer in Charge of the radio district in which the station is located for such additional time as may be required to complete repairs of the defective instrument.

§ 3.689 *Operating power*—(a) *Determination*—(1) *Visual transmitter.* The operating power of the visual transmitter shall be determined at the output terminal of the vestigial sideband filter, if such filter is used; otherwise, at the transmitter output terminal. The average power shall be measured while operating into a dummy load of substantially zero reactance and a resistance equal to the transmission line surge impedance, while transmitting a standard black television picture. The peak power shall be the power obtained by this method, multiplied by the factor 1.68. During this measurement the direct plate voltage and current of the last radio stage and the peak output voltage or current shall be read for use below.

(2) *Aural transmitter.* The operating power of the aural transmitter shall be determined by the indirect method. This is the product of the plate voltage (*Ep*) and the plate current (*Ip*) of the last radio stage, and an efficiency factor, *F*; that is:

$$\text{Operating power} = Ep \times Ip \times F$$

(i) The efficiency factor, ***F***, shall be established by the transmitter manufacturer for each type of transmitter for which he submits data to the Commission, and shall be shown in the instruction books supplied to the customer with each transmitter. In the case of composite equipment, the factor ***F*** shall be furnished to the Commission by the applicant along with a statement of the basis used in determining such factor.

(b) *Maintenance*—(1) *Visual transmitter.* The peak power shall be monitered by a peak reading device which reads proportionally to voltage, current, or power in the radio frequency transmission line, the meter to be calibrated during the measurement described in paragraph (a) (1) of this section. The operating power as so monitored shall be maintained as near as practicable to the authorized operating power and shall not exceed the limits of 10 percent above and 20 percent below the authorized power except in emergencies. As a further check, both the plate voltage and plate current of the output stage shall be measured with a standard black television picture with the transmitter operating into the antenna. These values must agree substantially with corresponding readings taken under paragraph (a) (1) of this section.

(2) *Aural transmitter.* The operating power of the aural transmitter shall be maintained as near as practicable to the authorized operating power, and shall not exceed the limits of 10 percent above and 20 percent below the authorized power except in emergencies.

(3) *Reduced power.* In the event it becomes impossible to operate with the authorized power, the station may be operated with reduced power for a period of 10 days or less provided the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified in writing immediately thereafter and also upon the resumption of the normal operating power.[36]

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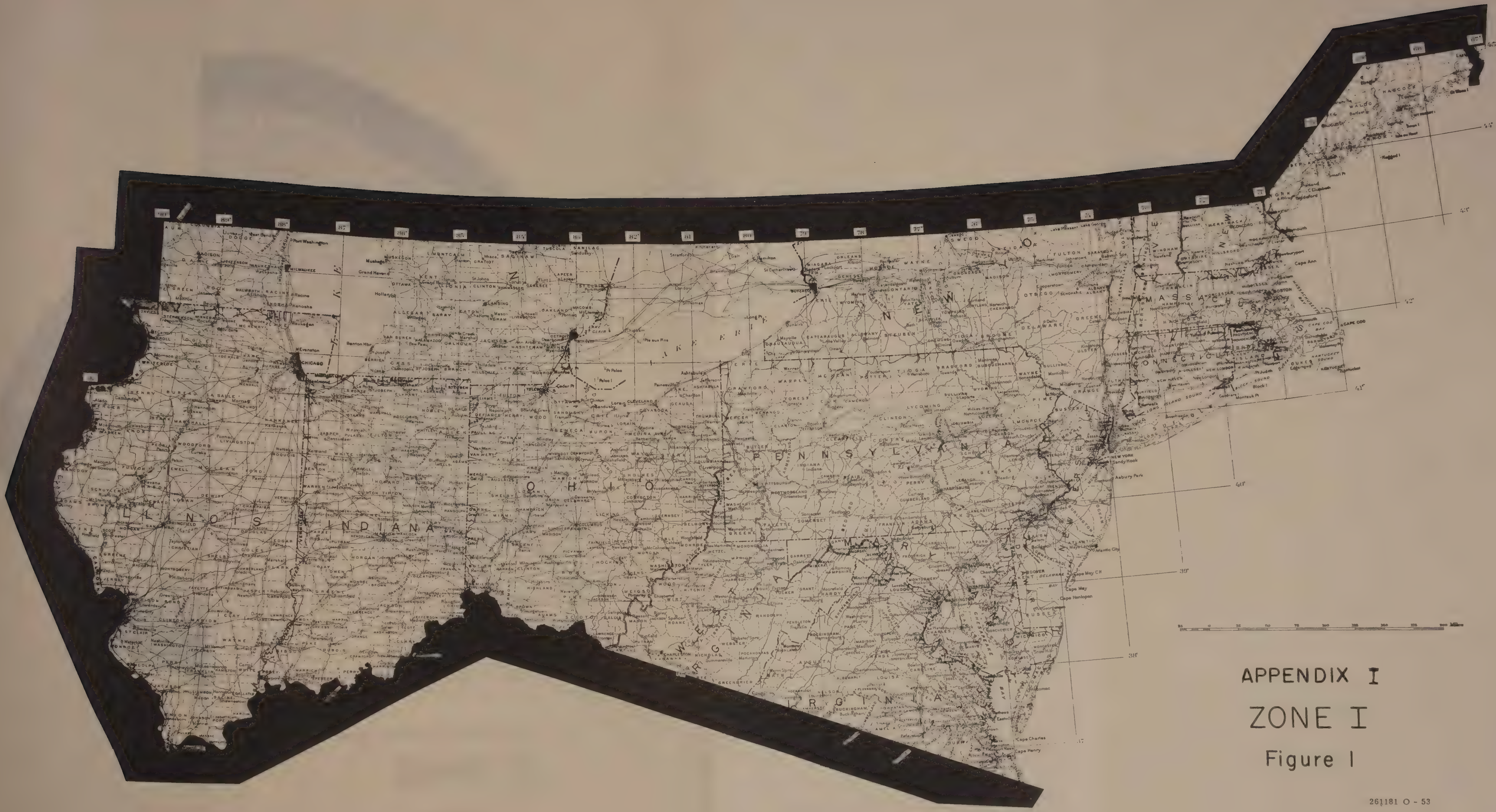
[34] Stations authorized prior to July 1, 1953, shall have until July 1, 1954 to comply with this requirement unless actual interference is caused.

[35] The 60 db. value for television transmitters specified in this rule should be considered as a temporary requirement which may be increased at a later date, especially when more higher-powered equipment is utilized. Stations should, therefore, give consideration to the installation of equipment with greater attenuation than 60 db.

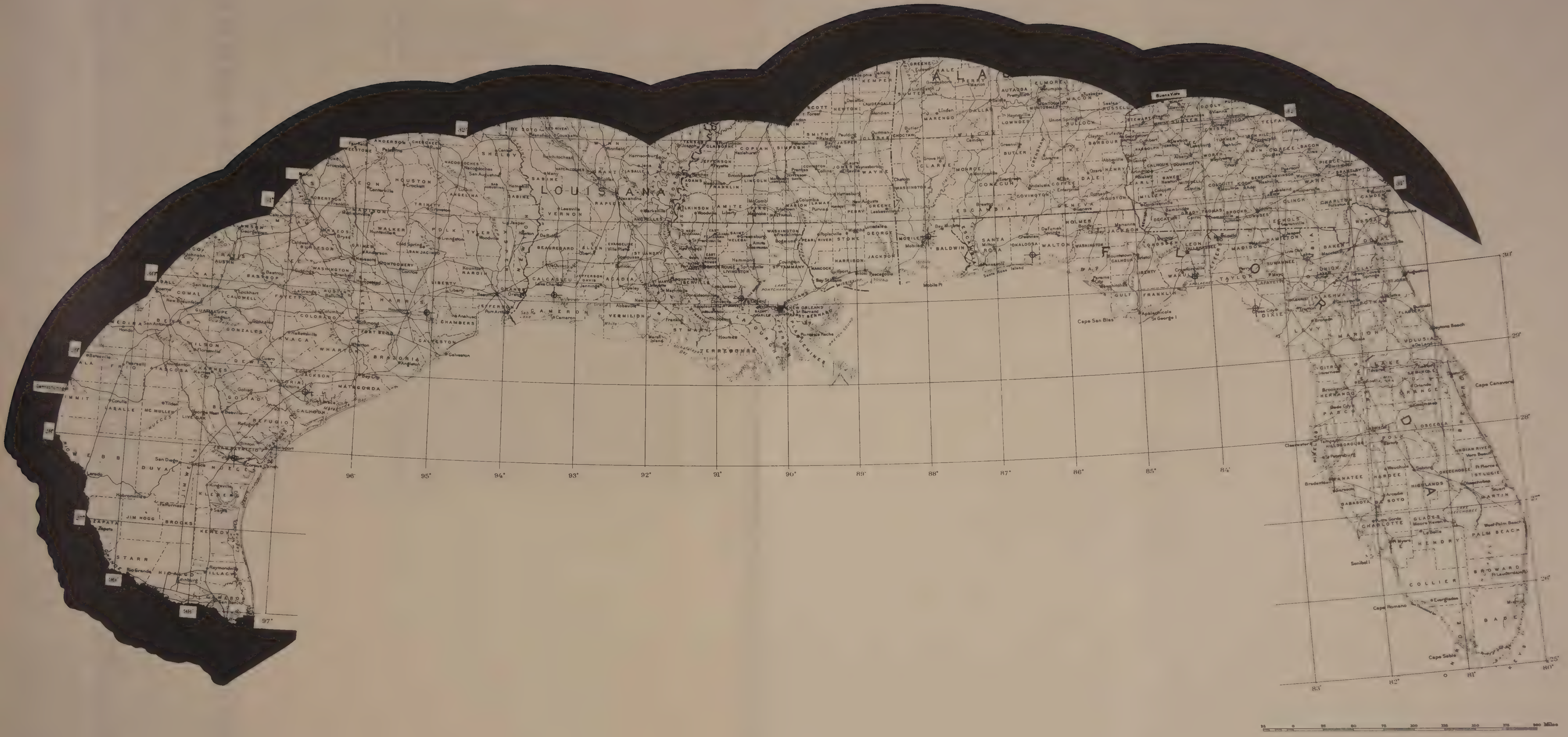
[36] See Part O of the Commission's rules for addresses of the Commission's engineering field offices.


ILLINOIS
INDIANA
OHIO
PENNSYLVANIA
NEW YORK
MARYLAND
WEST VIRGINIA
VIRGINIA
MASSACHUSETTS
CONNECTICUT
LAKE ERIE
CHICAGO
MILWAUKEE
BUFFALO
BOSTON
NEW YORK
Sandy Hook
Asbury Park
Cape May
Cape Henlopen
Cape Charles
Cape Henry
Cape Ann
CAPE COD
39°
38°
41°
43°
44°

APPENDIX I

ZONE I

Figure 1


LOUISIANA
ALA
FLORIDA
NEW ORLEANS
Mobile
Galveston
Corpus Christi
Laredo
Cape San Blas
Cape Canaveral
Cape Romano
Cape Sable
97°
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94°
93°
92°
91°
90°
89°
88°
87°
86°
85°
84°
83°
82°
81°
80°
30°
29°
28°
27°
26°
25°
Miles

ZONE III

Figure 2

APPENDIX II

TABLE I

MINUTES TO DECIMAL PARTS OF A DEGREE

Minutes	Degrees	Minutes	Degrees
1	0.01667	31	0.51667
2	.03333	32	.53333
3	.05	33	.55
4	.06667	34	.56667
5	.08333	35	.58333
6	.10	36	.60
7	.11667	37	.61667
8	.13333	38	.63333
9	.15	39	.65
10	.16667	40	.66667
11	.18333	41	.68333
12	.20	42	.70
13	.21667	43	.71667
14	.23333	44	.73333
15	.25	45	.75
16	.26667	46	.76667
17	.28333	47	.78333
18	.30	48	.80
19	.31667	49	.81667
20	.33333	50	.83333
21	.35	51	.85
22	.36667	52	.86667
23	.38333	53	.88333
24	.40	54	.90
25	.41667	55	.91667
26	.43333	56	.93333
27	.45	57	.95
28	.46667	58	.96667
29	.48333	59	.98333
30	.50	60	1.00

SECONDS TO DECIMAL PARTS OF A DEGREE

Seconds	Degrees	Seconds	Degrees
1	0.00028	31	0.00861
2	.00056	32	.00889
3	.00083	33	.00917
4	.00111	34	.00994
5	.00139	35	.00972
6	.00167	36	.01
7	.00194	37	.01028
8	.00222	38	.01056
9	.0025	39	.01083
10	.00278	40	.01111
11	.00306	41	.01139
12	.00333	42	.01167
13	.00361	43	.01194
14	.00389	44	.01222
15	.00417	45	.0125
16	.00444	46	.01278
17	.00472	47	.01306
18	.005	48	.01333
19	.00528	49	.01361
20	.00556	50	.01389
21	.00583	51	.01417
22	.00611	52	.01444
23	.00639	53	.01472
24	.00667	54	.015
25	.00694	55	.01528
26	.00722	56	.01556
27	.0075	57	.01583
28	.00778	58	.01611
29	.00806	59	.01639
30	.00833	60	.01667

TABLE II

MILES PER DEGREE OF LATITUDE DIFFERENCE

Middle latitude	Statute miles	Middle latitude	Statute miles
° ′		° ′	
25 0	68.828	38 0	68.968
30	68.833	30	68.974
26 0	68.837	39 0	68.980
30	68.842	30	68.986
27 0	68.847	40 0	68.992
30	68.852	30	68.998
28 0	68.857	41 0	69.004
30	68.862	30	69.011
29 0	68.867	42 0	69.017
30	68.873	30	69.023
30 0	68.878	43 0	69.029
30	68.883	30	69.035
31 0	68.889	44 0	69.041
30	68.894	30	69.047
32 0	68.899	45 0	69.053
30	68.905	30	69.060
33 0	68.911	46 0	69.066
30	68.916	30	69.072
34 0	68.922	47 0	69.078
30	68.928	30	69.084
35 0	68.933	48 0	69.090
30	68.939	30	69.096
36 0	68.945	49 0	69.102
30	68.951	30	69.108
37 0	68.957	50 0	69.115
30	68.962		

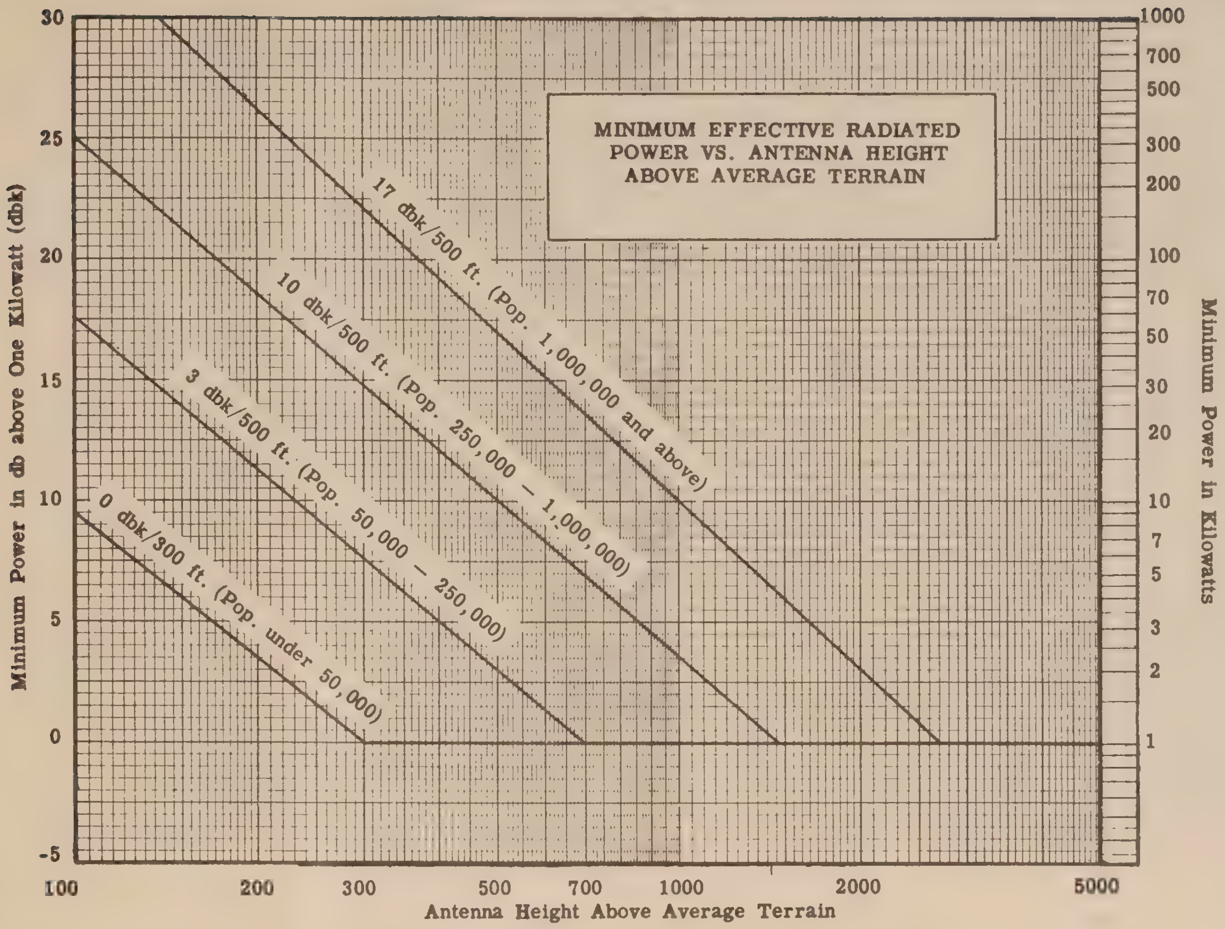
TABLE III

Middle latitude degrees	Miles per degree of longitude difference (statute miles)									
	25	26	27	28	29	30	31	32	33	34
Minutes										
0	62.728	62.211	61.675	61.120	60.547	59.955	59.345	58.716	58.070	57.406
1	62.720	62.202	61.666	61.111	60.537	59.945	59.335	58.706	58.059	57.395
2	62.712	62.193	61.657	61.101	60.528	59.935	59.324	58.695	58.048	57.384
3	62.703	62.184	61.648	61.092	60.517	59.925	59.314	58.684	58.037	57.373
4	62.694	62.176	61.639	61.082	60.508	59.915	59.303	58.674	58.026	57.362
5	62.686	62.167	61.630	61.073	60.498	59.905	59.293	58.663	58.015	57.356
6	62.677	62.158	61.621	61.064	60.488	59.895	59.282	58.652	58.004	57.339
7	62.669	62.149	61.611	61.054	60.478	59.885	59.272	58.642	57.994	57.328
8	62.660	62.140	61.602	61.045	60.469	59.875	59.262	58.631	57.983	57.316
9	62.652	62.132	61.593	61.035	60.459	59.865	59.252	58.620	57.972	57.305
10	62.644	62.123	61.584	61.026	60.449	59.855	59.241	58.610	57.961	57.294
11	62.635	62.114	61.575	61.017	60.440	59.845	59.231	58.599	57.950	57.283
12	62.627	62.105	61.566	61.007	60.430	59.835	59.221	58.588	57.939	57.271
13	62.618	62.096	61.557	60.997	60.420	59.825	59.210	58.578	57.928	57.260
14	62.609	62.088	61.547	60.988	60.410	59.814	59.200	58.567	57.917	57.249
15	62.601	62.079	61.538	60.979	60.400	59.804	59.189	58.556	57.906	57.238
16	62.592	62.070	61.529	60.969	60.390	59.794	59.179	58.546	57.895	57.227
17	62.583	62.061	61.520	60.959	60.381	59.784	59.168	58.535	57.884	57.215
18	62.575	62.052	61.510	60.950	60.371	59.774	59.158	58.524	57.873	57.204
19	62.567	62.044	61.501	60.940	60.361	59.764	59.147	58.514	57.862	57.192
20	62.559	62.035	61.492	60.931	60.352	59.754	59.137	58.503	57.851	57.181
21	62.550	62.026	61.483	60.921	60.342	59.744	59.127	58.492	57.840	57.170
22	62.541	62.017	61.474	60.912	60.332	59.734	59.116	58.481	57.829	57.159
23	62.532	62.008	61.465	60.902	60.322	59.723	59.106	58.470	57.818	57.147
24	62.524	61.999	61.455	60.893	60.312	59.713	59.095	58.460	57.807	57.136
25	62.515	61.990	61.446	60.883	60.302	59.703	59.085	58.449	57.796	57.125
26	62.507	61.981	61.437	60.874	60.292	59.693	59.074	58.438	57.785	57.113
27	62.498	61.972	61.428	60.865	60.282	59.683	59.064	58.428	57.774	57.102
28	62.489	61.963	61.419	60.855	60.273	59.672	59.054	58.417	57.763	57.090
29	62.480	61.955	61.409	60.845	60.263	59.662	59.043	58.406	57.752	57.079
30	62.472	61.946	61.400	60.836	60.253	59.652	59.033	58.396	57.741	57.068
31	62.463	61.937	61.391	60.826	60.243	59.642	59.022	58.385	57.729	57.057
32	62.455	61.928	61.381	60.817	60.233	59.632	59.012	58.374	57.718	57.045
33	62.446	61.918	61.372	60.807	60.223	59.622	59.001	58.363	57.707	57.034
34	62.438	61.909	61.363	60.798	60.213	59.611	58.991	58.352	57.696	57.022
35	62.429	61.900	61.354	60.788	60.203	59.601	58.980	58.341	57.685	57.011
36	62.420	61.891	61.344	60.778	60.194	59.591	58.970	58.331	57.674	56.999
37	62.412	61.882	61.335	60.768	60.184	59.581	58.960	58.320	57.663	56.988
38	62.403	61.874	61.325	60.759	60.174	59.571	58.949	58.309	57.652	56.977
39	62.395	61.865	61.316	60.750	60.164	59.561	58.939	58.298	57.641	56.966
40	62.386	61.856	61.307	60.740	60.154	59.550	58.928	58.288	57.629	56.954
41	62.377	61.847	61.298	60.730	60.144	59.540	58.917	58.277	57.618	56.943
42	62.369	61.838	61.289	60.721	60.134	59.530	58.907	58.266	57.607	56.931
43	62.360	61.829	61.279	60.711	60.124	59.520	58.896	58.255	57.596	56.919
44	62.351	61.820	61.270	60.701	60.114	59.510	58.886	58.244	57.585	56.908
45	62.342	61.811	61.261	60.692	60.104	59.500	58.875	58.233	57.574	56.897
46	62.334	61.802	61.252	60.682	60.094	59.489	58.865	58.223	57.563	56.885
47	62.325	61.793	61.242	60.672	60.084	59.479	58.854	58.212	57.552	56.874
48	62.316	61.784	61.233	60.663	60.074	59.468	58.843	58.201	57.541	56.863
49	62.308	61.775	61.223	60.654	60.065	59.458	58.833	58.190	57.529	56.851
50	62.299	61.766	61.214	60.644	60.055	59.448	58.822	58.179	57.518	56.840
51	62.290	61.757	61.205	60.634	60.045	59.438	58.812	58.168	57.507	56.829
52	62.281	61.748	61.195	60.625	60.035	59.427	58.801	58.157	57.496	56.817
53	62.272	61.739	61.186	60.615	60.025	59.417	58.790	58.147	57.485	56.805
54	62.264	61.730	61.176	60.605	60.015	59.406	58.780	58.136	57.473	56.794
55	62.255	61.721	61.167	60.595	60.005	59.396	58.769	58.125	57.462	56.782
56	62.246	61.712	61.158	60.586	59.995	59.386	58.759	58.114	57.451	56.771
57	62.237	61.702	61.148	60.576	59.985	59.376	58.748	58.103	57.440	56.759
58	62.228	61.693	61.139	60.566	59.975	59.365	58.737	58.092	57.429	56.748
59	62.220	61.684	61.129	60.557	59.965	59.355	58.727	58.081	57.418	56.737

Table III—Continued

Middle latitude degrees	Miles per degree of longitude difference (statute miles)														
	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Minutes															
0	56.725	56.026	55.311	54.578	53.828	53.063	52.280	51.482	50.669	49.839	48.995	48.135	47.260	46.371	45.468
1	56.713	56.014	55.299	54.565	53.816	53.050	52.267	51.469	50.655	49.825	48.980	48.120	47.245	46.356	45.453
2	56.702	56.002	55.286	54.553	53.803	53.137	52.254	51.455	50.641	49.811	48.966	48.106	47.231	46.341	45.438
3	56.690	55.991	55.274	54.541	53.791	53.024	52.241	51.442	50.627	49.797	48.952	48.091	47.216	46.326	45.422
4	56.678	55.979	55.262	54.528	53.778	53.011	52.229	51.429	50.614	49.783	48.937	48.077	47.201	46.311	45.407
5	56.667	55.967	55.250	54.516	53.765	52.998	52.215	51.415	50.600	49.769	48.923	48.063	47.187	46.296	45.392
6	56.655	55.955	55.238	54.503	53.753	52.985	52.201	51.402	50.586	49.755	48.909	48.048	47.172	46.281	45.377
7	56.644	55.943	55.226	54.491	53.740	52.972	52.188	51.388	50.573	49.741	48.895	48.034	47.158	46.266	45.362
8	56.632	55.931	55.213	54.479	53.727	52.959	52.175	51.375	50.559	49.727	48.881	48.019	47.143	46.252	45.346
9	56.621	55.920	55.201	54.466	53.715	52.946	52.162	51.361	50.545	49.713	48.867	48.005	47.128	46.237	45.331
10	56.610	55.908	55.189	54.454	53.702	52.933	52.149	51.348	50.531	49.699	48.852	47.990	47.114	46.222	45.317
11	56.598	55.896	55.177	54.441	53.689	52.920	52.135	51.335	50.517	49.685	48.838	47.975	47.099	46.207	45.301
12	56.586	55.884	55.165	54.429	53.677	52.907	52.122	51.321	50.504	49.671	48.824	47.961	47.084	46.192	45.286
13	56.575	55.872	55.153	54.417	53.664	52.894	52.109	51.307	50.490	49.657	48.809	47.946	47.069	46.177	45.270
14	56.563	55.860	55.141	54.404	53.651	52.881	52.096	51.294	50.476	49.643	48.795	47.932	47.054	46.162	45.255
15	56.552	55.849	55.128	54.392	53.639	52.868	52.082	51.280	50.462	49.629	48.781	47.917	47.040	46.147	45.240
16	56.540	55.837	55.116	54.380	53.626	52.855	52.069	51.267	50.449	49.615	48.767	47.903	47.025	46.132	45.225
17	56.529	55.825	55.104	54.367	53.613	52.842	52.056	51.253	50.435	49.601	48.752	47.888	47.010	46.117	45.210
18	56.517	55.813	55.093	54.354	53.601	53.830	52.043	51.240	50.421	49.587	48.738	47.874	46.995	46.102	45.194
19	56.505	55.802	55.080	54.342	53.588	52.817	52.030	51.226	50.408	49.573	48.724	47.859	46.980	46.087	45.179
20	56.493	55.790	55.068	54.330	53.575	52.804	52.016	51.213	50.394	49.559	48.709	47.845	46.966	46.072	45.164
21	56.482	55.778	55.056	54.317	53.562	52.791	52.003	51.199	50.380	49.545	48.695	47.830	46.951	46.057	45.149
22	56.470	55.766	55.043	54.304	53.549	52.778	51.990	51.185	50.366	49.531	48.681	47.816	46.936	46.042	45.134
23	56.459	55.754	54.031	54.292	53.536	52.765	51.977	51.172	50.352	49.517	48.667	47.801	46.921	46.027	45.118
24	56.447	55.742	55.019	54.280	53.524	52.752	51.963	51.159	50.338	49.503	48.653	47.787	46.906	46.012	45.103
25	56.435	55.730	55.007	54.267	53.511	52.739	51.950	51.145	50.325	49.489	48.638	47.772	46.891	45.997	45.088
26	56.424	55.718	54.995	54.255	53.498	52.726	51.936	51.132	50.311	49.475	48.623	47.758	46.877	45.982	45.073
27	56.412	55.706	54.983	54.242	53.486	52.713	51.923	51.118	50.297	49.461	48.609	47.743	46.862	45.967	45.057
28	56.401	55.694	54.970	54.230	53.473	52.700	51.910	51.104	50.283	49.447	48.595	47.729	46.847	45.952	45.042
29	56.389	55.682	54.958	54.217	53.460	52.687	51.897	51.091	50.270	49.433	48.581	47.714	46.832	45.937	45.026
30	56.378	55.671	54.946	54.205	53.448	52.674	51.883	51.077	50.256	49.419	48.567	47.699	46.818	45.922	45.011
31	56.366	55.659	54.934	54.192	53.435	52.661	51.870	51.064	50.242	49.405	48.552	47.685	46.803	45.906	44.996
32	56.354	55.647	54.922	54.180	53.422	52.648	51.857	51.050	50.228	49.391	48.538	47.671	46.788	45.891	44.981
33	56.343	55.635	54.909	54.167	53.409	52.635	51.843	51.036	50.214	49.377	48.524	47.656	46.773	45.876	44.965
34	56.331	55.623	54.897	54.155	53.396	52.622	51.830	51.023	50.200	49.362	48.509	47.641	46.759	45.861	44.950
35	56.319	55.611	54.885	54.142	53.384	52.608	51.817	51.010	50.186	49.348	48.494	47.627	46.744	45.846	44.935
36	56.308	55.599	54.872	54.130	53.371	52.595	51.804	50.996	50.173	49.334	48.480	47.612	46.729	45.831	44.920
37	56.296	55.587	54.861	54.117	53.358	52.582	51.790	50.982	50.159	49.320	48.466	47.597	46.714	45.816	44.904
38	56.284	55.575	54.848	54.104	53.345	52.569	51.777	50.968	50.145	49.306	48.452	47.583	46.699	45.801	44.889
39	56.273	55.563	54.836	54.092	53.332	52.556	51.763	50.955	50.131	49.292	48.437	47.568	46.684	45.786	44.874
40	56.261	55.551	54.824	54.080	53.320	52.543	51.750	50 942	50.117	49.277	48.423	47.553	46.669	45.771	44.858
41	56.249	55.539	54.811	54.067	53.307	52.530	51.736	50.928	50.103	49.263	48.409	47.539	46.654	45.756	44.843
42	56.238	55.527	54.799	54.054	53.294	52.517	51.723	50.914	50.089	49.249	48.395	47.524	46.639	45.741	44.827
43	56.226	55.515	54.787	54.042	53.281	52.504	51.710	50.901	50.076	49.235	48.380	47.509	46.624	45.726	44.812
44	56.214	55.503	54.775	54.030	53.268	52.491	51.697	50.887	50.062	49.221	48.365	47.495	46.609	45.710	44.797
45	56.202	55.491	54.762	54.017	53.255	52.478	51.684	50.873	50.048	49.207	48.351	47.480	46.595	45.695	44.782
46	56.191	55.479	54.750	54.005	53.243	52.465	51.670	50.860	50.034	49.193	48.336	47.465	46.580	45.680	44.766
47	56.179	55.467	54.738	53.992	53.230	52.452	51.657	50.846	50.020	49.179	48.322	47.451	46.565	45.665	44.751
48	56.167	55.455	54.726	53.979	53.217	52.438	51.643	50.833	50.006	49.165	48.308	47.436	46.551	45.650	44.736
49	56.156	55.443	54.713	53.967	53.204	52.425	51.630	50.819	49.992	49.151	48.293	47.421	46.536	45.635	44.720
50	56.144	55.431	54.701	53.955	53.191	52.412	51.616	50.805	49.978	49.136	48.279	47.407	46.521	45.620	44.705
51	56.132	55.419	54.688	53.942	53.178	52.399	51.603	50.792	49.965	49.122	48.265	47.392	46.506	45.604	44.689
52	56.120	55.407	54.676	53.929	53.165	52.386	51.590	50.778	49.951	49.108	48.250	47.377	46.491	45.589	44.674
53	56.109	55.395	54.664	53.917	53.152	52.373	51.576	50.764	49.937	49.094	48.236	47.363	46.476	45.574	44.659
54	56.097	55.383	54.652	53.904	53.140	52.359	51.563	50.751	49 923	49.080	48.222	47.348	46.461	45.559	44.643
55	56.085	55.371	54.639	53.891	53.127	52.346	51.549	50.737	49.909	49.066	48.207	47.333	46.446	45.544	44.628
56	56.073	55.359	54.627	53.879	53.114	52.333	51.536	50.723	49.895	49.051	48.192	47.319	46.431	45.529	44.613
57	56.061	55.347	54.614	53.867	53.101	52.320	51.523	50.710	49.881	49.037	48.178	47.304	46.416	45.514	44.597
58	56.050	55.335	54.602	53 854	53.088	52.307	51.509	50.696	49.867	49.023	48.163	47.289	46.401	45.499	44.582
59	56.038	55.323	54.590	53.841	53.075	52.294	51.496	50.682	49.853	49.009	48.149	47.275	46.386	45.484	44.566

APPENDIX III—FIGURE 1.



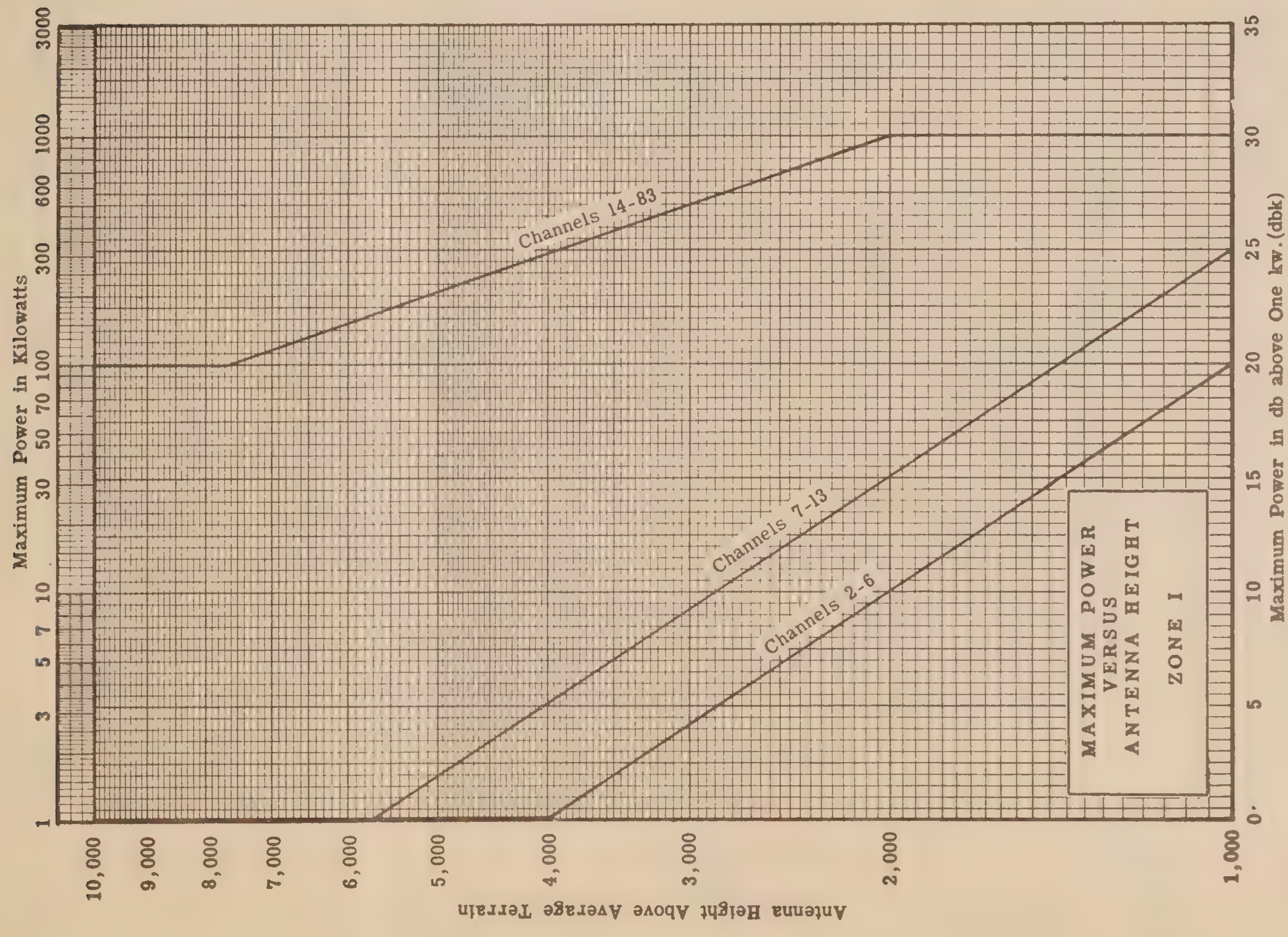


FIGURE 2 (a).

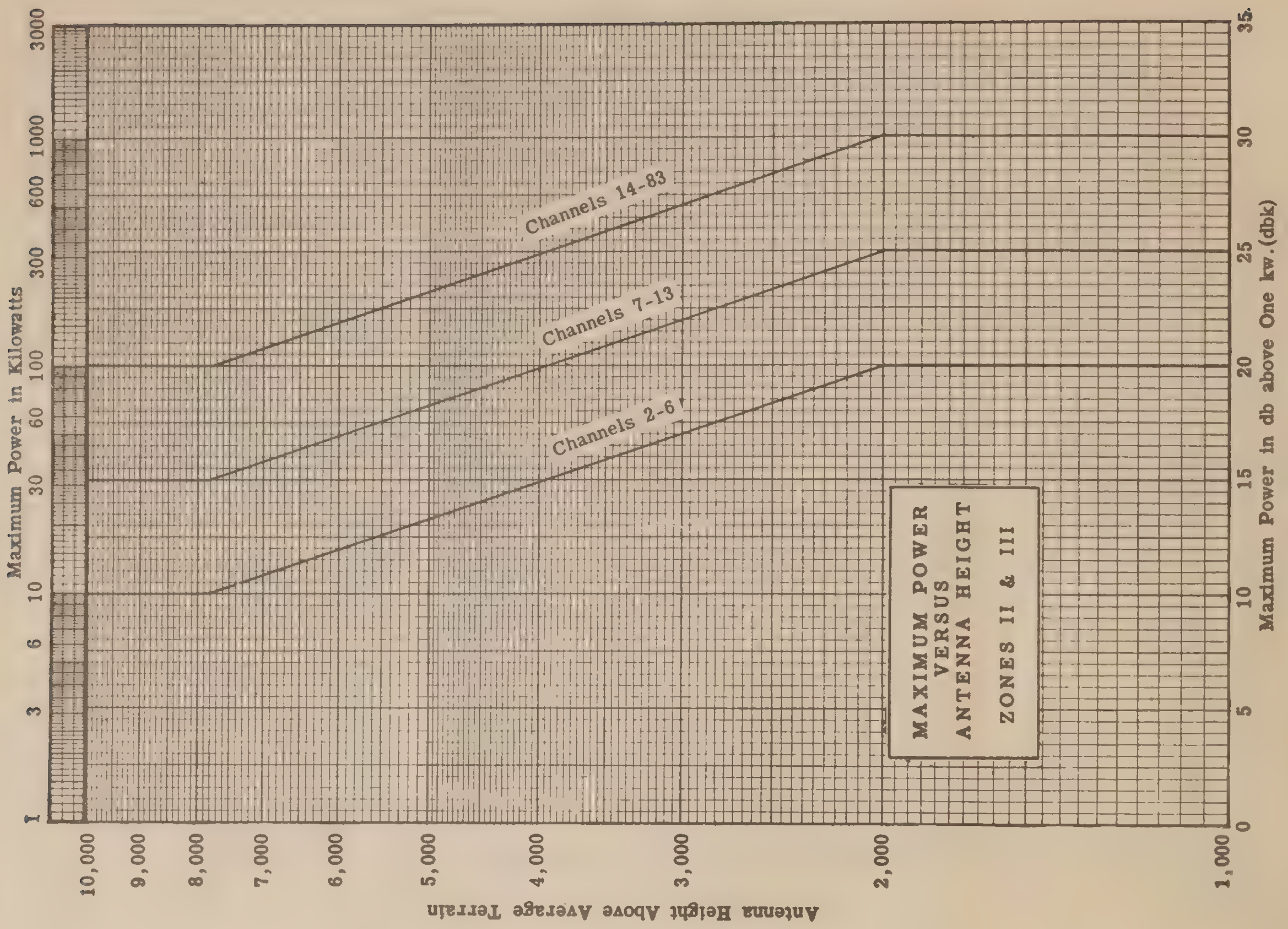
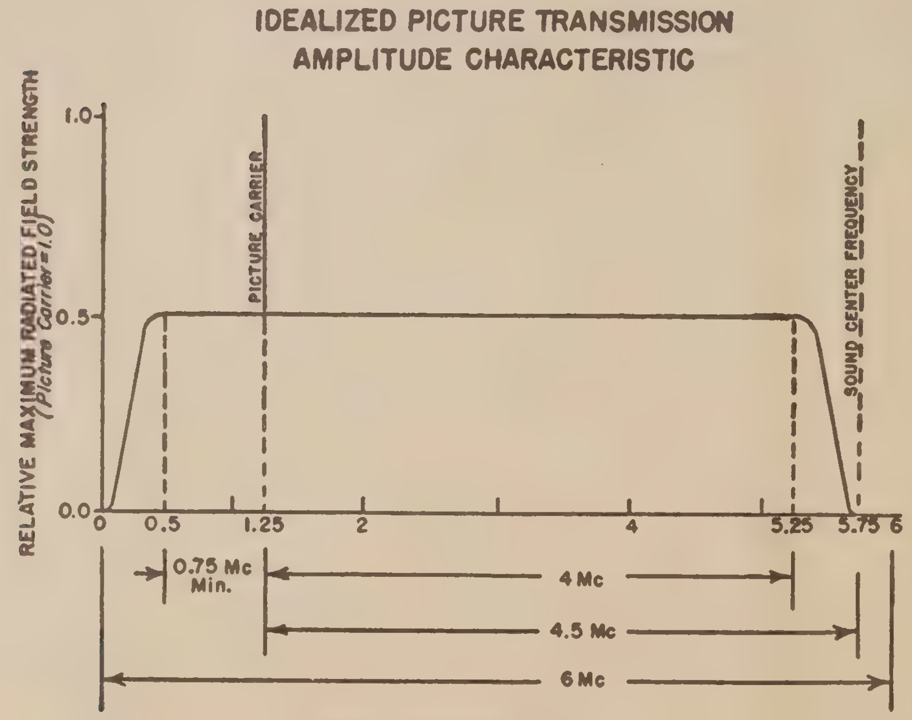


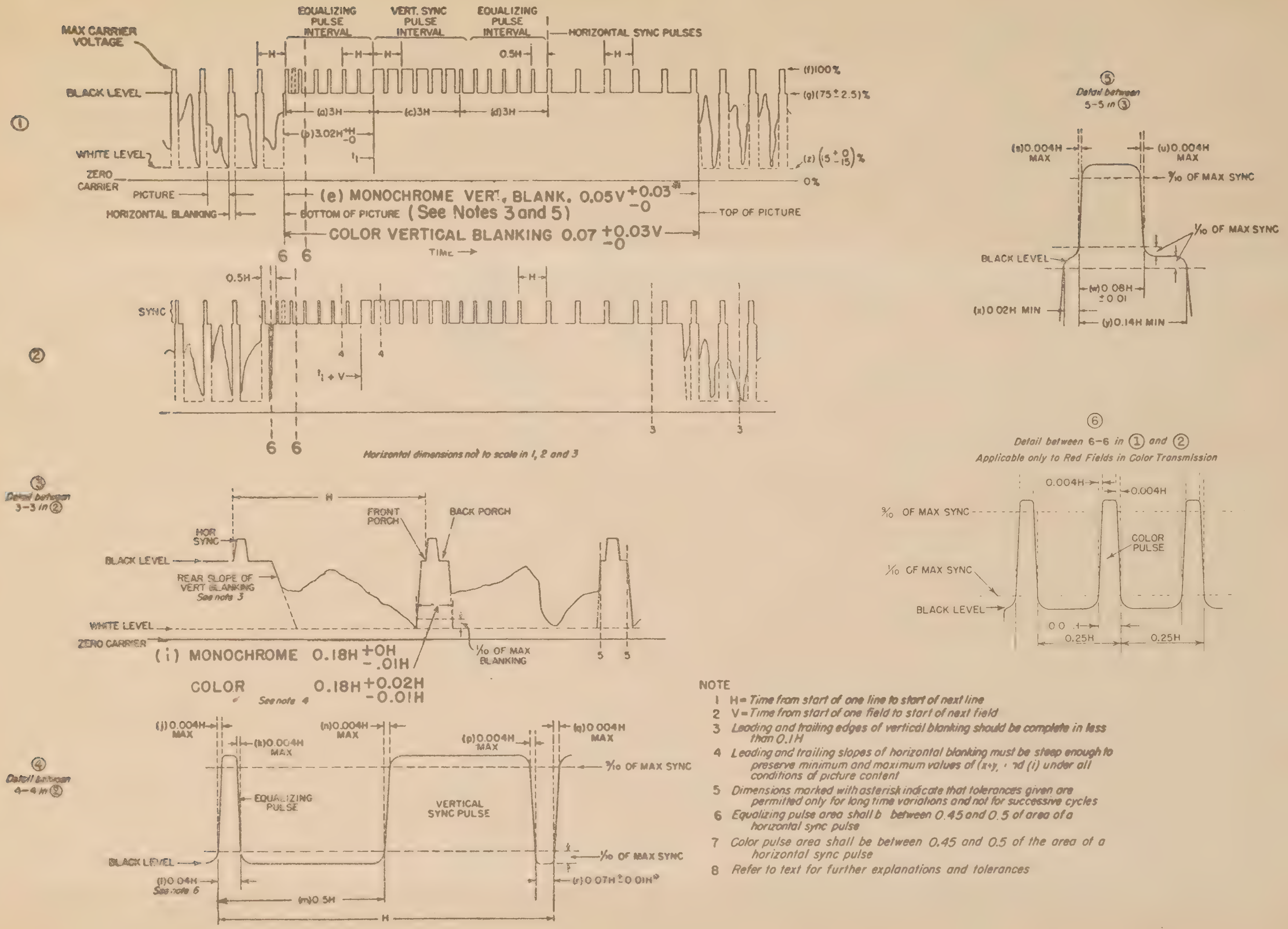
FIGURE 2 (b).



Note: Not drawn to scale

FIGURE 3.

TELEVISION SYNCHRONIZING WAVEFORM

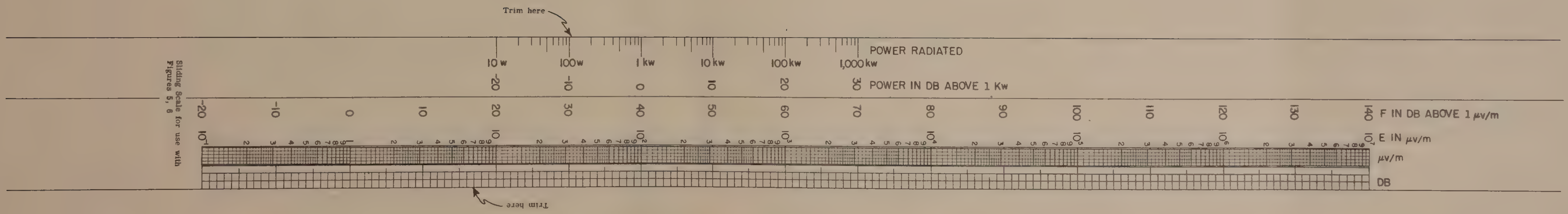


①
MAX CARRIER VOLTAGE
BLACK LEVEL
WHITE LEVEL
ZERO CARRIER
PICTURE
HORIZONTAL BLANKING
EQUALIZING PULSE INTERVAL
VERT. SYNC PULSE INTERVAL
EQUALIZING PULSE INTERVAL
HORIZONTAL SYNC PULSES
H
0.5H
(f)100%
(g)(75 ± 2.5)%
(z)(15 +0 −15)%
0%
(a)3H
(c)3H
(d)3H
(b)3.02H +H −0
t_1
(e) MONOCHROME VERT. BLANK. 0.05V +0.03* −0
BOTTOM OF PICTURE (See Notes 3 and 5)
TOP OF PICTURE
COLOR VERTICAL BLANKING 0.07 +0.03V −0
TIME →
6 6
②
SYNC
0.5H
H
4 4
t_1 + V
3 3
6 6
Horizontal dimensions not to scale in 1, 2 and 3
③ Detail between 3-3 in ②
H
HOR SYNC
BLACK LEVEL
FRONT PORCH
BACK PORCH
REAR SLOPE OF VERT BLANKING See note 3
WHITE LEVEL
ZERO CARRIER
(i) MONOCHROME 0.18H +0H −.01H
COLOR 0.18H +0.02H −0.01H
See note 4
1/10 OF MAX BLANKING
5 5
④ Detail between 4-4 in ②
(j)0.004H MAX
(k)0.004H MAX
(n)0.004H MAX
(p)0.004H MAX
(q)0.004H MAX
9/10 OF MAX SYNC
EQUALIZING PULSE
VERTICAL SYNC PULSE
BLACK LEVEL
1/10 OF MAX SYNC
(l)0.04H See note 6
(m)0.5H
(r)0.07H ± 0.01H*
H
⑤ Detail between 5-5 in ③
(s)0.004H MAX
(u)0.004H MAX
9/10 OF MAX SYNC
1/10 OF MAX SYNC
BLACK LEVEL
(w)0.08H ±0.01
(x)0.02H MIN
(y)0.14H MIN
⑥ Detail between 6-6 in ① and ②
Applicable only to Red Fields in Color Transmission
0.004H
0.004H
9/10 OF MAX SYNC
COLOR PULSE
1/10 OF MAX SYNC
BLACK LEVEL
0.0
0.25H
0.25H

NOTE

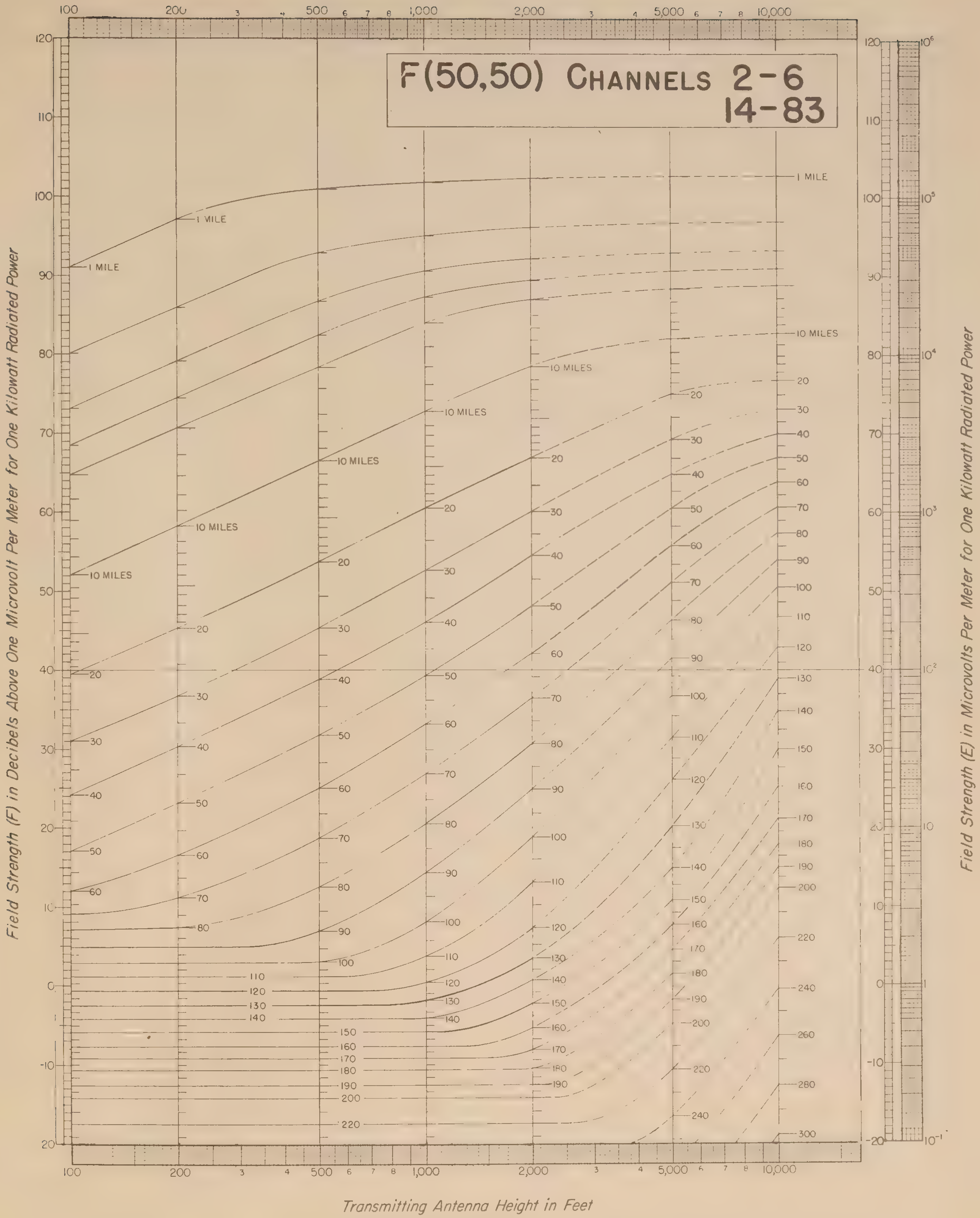
1. H = Time from start of one line to start of next line
2. V = Time from start of one field to start of next field
3. Leading and trailing edges of vertical blanking should be complete in less than 0.1H
4. Leading and trailing slopes of horizontal blanking must be steep enough to preserve minimum and maximum values of (x+y) and (i) under all conditions of picture content
5. Dimensions marked with asterisk indicate that tolerances given are permitted only for long time variations and not for successive cycles
6. Equalizing pulse area shall be between 0.45 and 0.5 of area of a horizontal sync pulse
7. Color pulse area shall be between 0.45 and 0.5 of the area of a horizontal sync pulse
8. Refer to text for further explanations and tolerances

Figure 4



Sliding Scale for use with Figures 5, 6

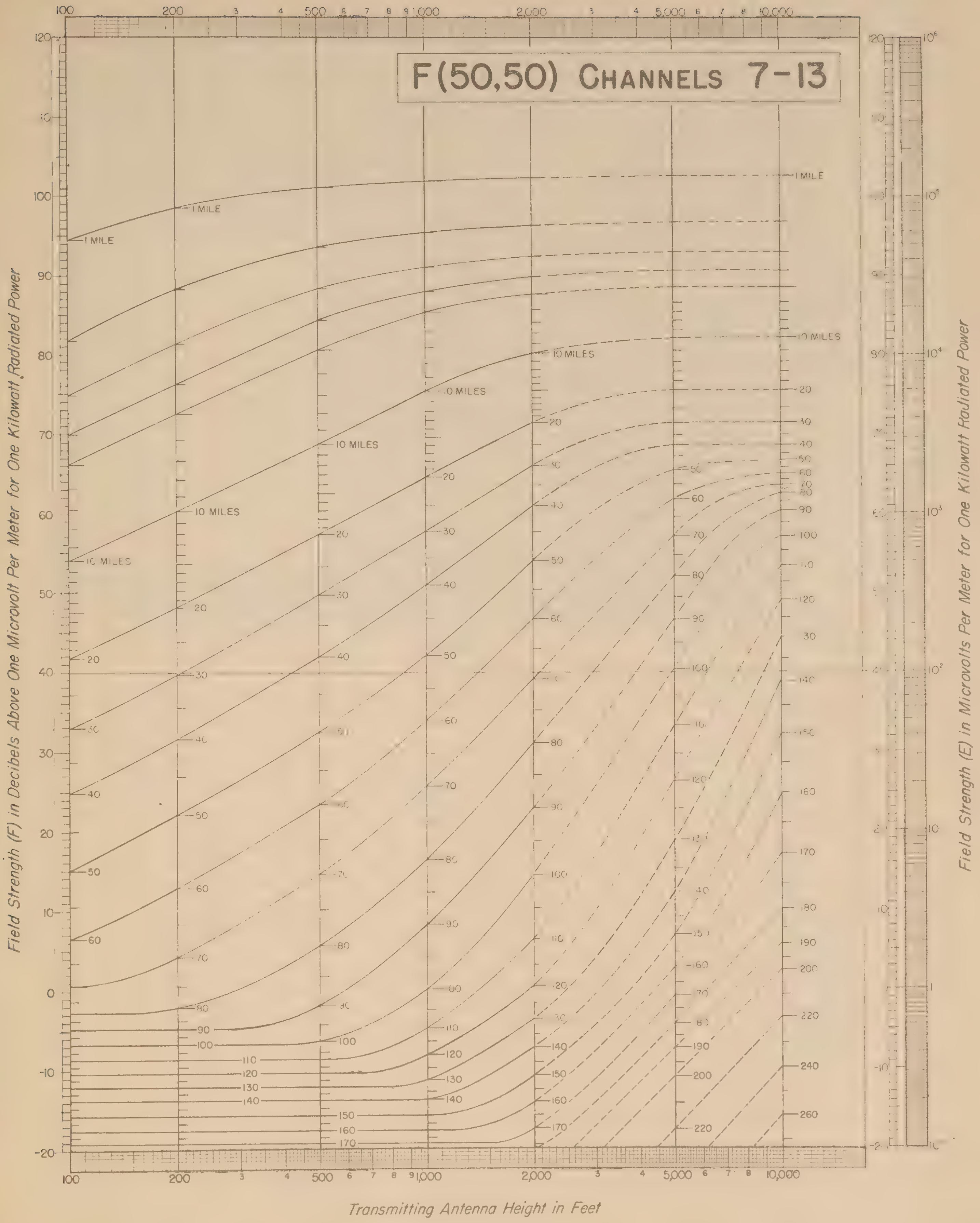
Trim here
10 w
100w
1 kw
10 kw
100kw
1,000kw
POWER RADIATED
-20
-10
0
10
20
30
POWER IN DB ABOVE 1 Kw
-20
-10
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
F IN DB ABOVE 1 μv/m
10^{-1}
1
10
10^2
10^3
10^4
10^5
10^6
10^7
E IN μv/m
μv/m
DB
Trim here



TELEVISION CHANNELS 2-6, 14-83

ESTIMATED FIELD STRENGTH EXCEEDED AT 50 PERCENT OF THE POTENTIAL RECEIVER LOCATIONS FOR AT LEAST 50 PERCENT OF THE TIME AT A RECEIVING ANTENNA HEIGHT OF 30 FEET

FIGURE 5



TELEVISION CHANNELS 7-13

ESTIMATED FIELD STRENGTH EXCEEDED AT 50 PERCENT OF THE POTENTIAL
RECEIVER LOCATIONS FOR AT LEAST 50 PERCENT OF THE TIME
AT A RECEIVING ANTENNA HEIGHT OF 30 FEET

FIGURE 6

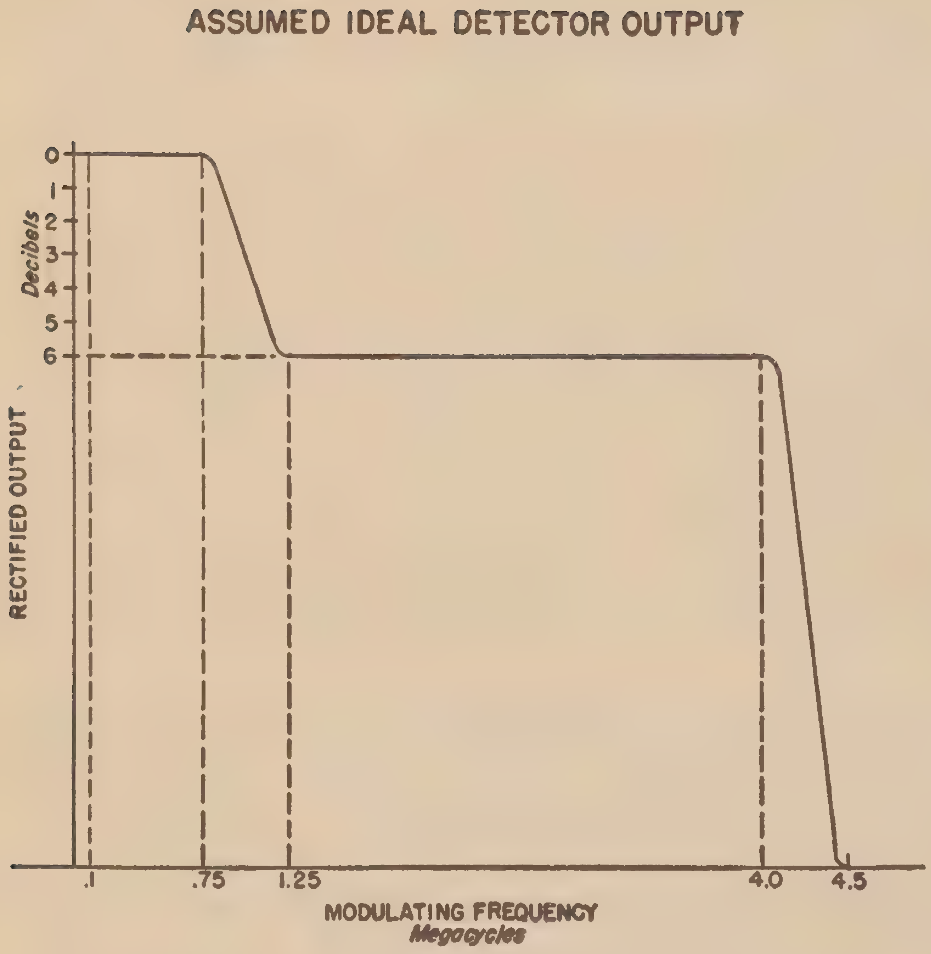


FIGURE 7.

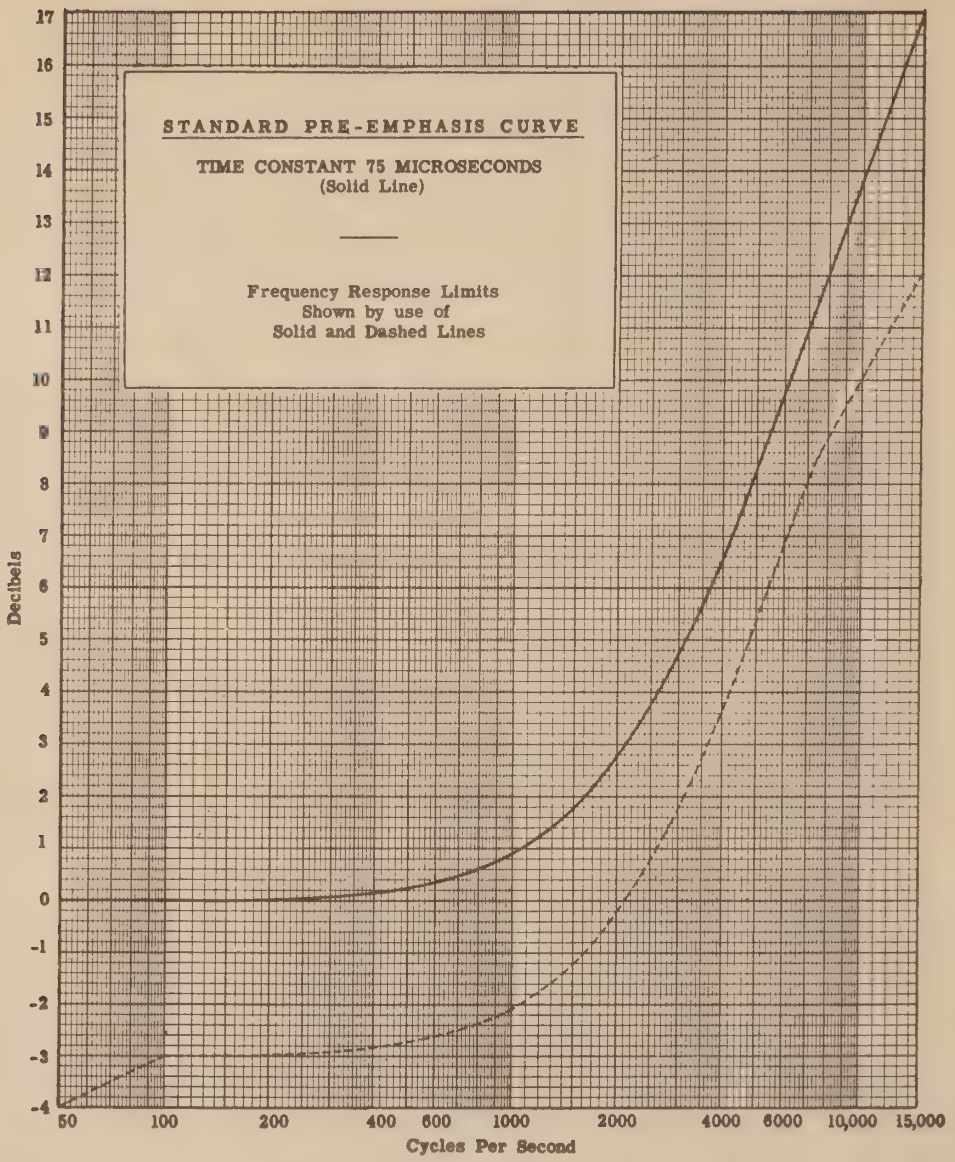


FIGURE 8.

SUBPART F—RULES GOVERNING INTERNATIONAL BROADCAST STATIONS

DEFINITION OF INTERNATIONAL BROADCAST STATIONS AND ALLOCATION OF FACILITIES

§ 3.701 *Defined.* The term "international broadcast station" means a station licensed for the transmission of broadcast programs for international public reception. (Frequencies for these stations are allocated from bands assigned (between 6000 and 21700 kilocycles) for broadcasting by international agreement.)

§ 3.702 *Frequency assignments.* (a) The following groups of frequencies are allocated for assignment to international broadcast stations:

[In kilocycles]

Group A	Group B	Group C	Group D	Group E	Group F
6040	9530	11710	15130	17750	21460
6060	[1] [2] 9550	[1] [2] 11730	15150	17760	[1] [2] 21500
6080	9570	11790	15210	17780	21520
6100	9590	11820	15250	17800	21540
[1] 6120	9650	11830	15270	17830	21570
6140	9670	11870	15330		21590
6170		11890	15350		21610
6190					21630
					21650

[1] Authorizations for international broadcast stations which permit operation on these frequencies shall be subject to the condition that the authorizations for these frequencies may be modified by the Commission to delete these frequencies without advance notice or hearing.

[2] Authorizations for international broadcast stations which permit operation on these frequencies shall be subject to the condition that there shall be no commercial or advertising announcements of any kind in the programs broadcast through the medium of these frequencies, and that the names of program sponsors shall not be broadcast.

(b) Additional frequencies allocated by international agreement may be assigned to international broadcast stations subject to the conditions that no objectionable interference results to the service of foreign international broadcast stations which, in the opinion of the Commission, have priority of assignment.

(c) Any frequency licensed to an international broadcast station shall also be available for assignment to other international broadcast stations, provided no objectionable interference is caused to the service of any United States international broadcast station.

(d)[1] An international broadcast station will not be authorized to use more than one frequency listed in any group listed in paragraph (a) of this section without a showing of technical necessity.

(e)[1] Not more than one frequency shall be used simultaneously under the same authorization and call letter designation.

RULES GOVERNING ADMINISTRATIVE PROCEDURE

§ 3.711 *Application for international broadcast stations.* Each applicant for a construction permit for a new international broadcast station, change in facilities of any existing international broadcast station, or international station license or modification of license shall file with the Commission in Washington, D. C., three copies of applications on the appropriate form designated by the Commission and a like number of exhibits and other papers incorporated therein and made a part thereof. Only the original copy need be sworn to. If the application is for a construction permit for a new international station, FCC Form 309 should be filed; for an international station license, FCC Form 310 should be filed; for modification of an international station license or for change in facilities of an existing international station, FCC Form 312 should be filed.

§ 3.712 *Full disclosures.* Each application shall contain full and complete disclosures with regard to the real party or parties in interest, and their legal, technical, financial, and other qualifications, and as to all matters and things required to be disclosed by the application forms.

§ 3.713 *Installation or removal of apparatus.* Applications for construction permit or modification thereof, involving removal of existing transmitting apparatus and/or installation of new transmitting apparatus, shall be filed at least 60 days prior to the contemplated removal and/or installation.

§ 3.714 *Period of construction.* Each construction permit will specify a maximum of 60 days from the date of granting thereof as the time within which construction of the station shall begin, and a maximum of six months thereafter as the time within which construction shall be completed and the station ready for operation, unless otherwise determined by the Commission upon proper showing in any particular case.

§ 3.715 *Forfeiture of construction permits; extension of time.* (a) A construction permit shall be automatically forfeited if the station is not ready for operation within the time specified therein or within such further time as the Commission may have allowed for completion, and a notation of the forfeiture of any construction permit under this provision will be placed in the records of the Commission as of the expiration date.

(b) An application (FCC Form 701) for extension of time within which to construct a station shall be filed at least 30 days prior to the expiration date of such permit if the facts supporting such application for extension are known to the applicant in time to permit such filing. In other cases such applications will be accepted upon a showing satisfactory to the Commission of sufficient reasons for filing within less than 30 days prior to the expiration date. Such applications will be granted upon a specific and detailed showing that the failure to complete was due to causes not under the control of the grantee, or upon a specific and detailed showing of other matters sufficient to justify the extension.

§ 3.716 *Equipment tests.* (a) Upon completion of construction of an international station in exact accordance with the terms of the construction permit, the technical provisions of the application therefor and the rules and regulations and prior to filing of application for license, the permittee is authorized to test the equipment for a period not to exceed 30 days: *Provided,* That the Engineer in Charge of the radio district in which the station is located and the Commission are notified 2 days in advance of the beginning of tests.

(b) The Commission may notify the permittee to conduct no tests or may cancel, suspend, or change the date of beginning for the period of such tests as and when such action may appear to be in the public interest, convenience, and necessity.

(c) The Commission may grant extensions of time upon showing of reasonable need therefor.

§ 3.717 *Program tests.* (a) When construction and equipment tests are completed in exact accordance with the terms of the construction permit, the technical provisions of the application therefor, and after an application for station license has been filed with the Commission showing the equipment to be in satisfactory operating condition, the permittee is authorized to conduct program tests in exact accordance with the terms of the construction permit for a period not to exceed 30 days: *Provided,* That the Engineer in Charge of the radio district in which the station is located and the Commission are notified 2 days in advance of the beginning of such tests.

(b) The Commission reserves the right to cancel such tests or suspend, or change the date of beginning for the period of such tests as and when such action may appear to be in the public interest, convenience, and necessity by notifying the permittee.

(c) The authorization for tests embodied in this section or § 3.716 shall not be construed as constituting a license to operate but as a necessary part of the construction.

§ 3.718 *Normal license period.* All international broadcast station licenses will be issued so as to expire at the hour of 3 a. m. eastern standard time and will be issued for a normal license period of 1 year expiring November 1.

§ 3.719 *License; simultaneous modification and renewal.* When an application is granted by the Commission necessitating the issuance of a modified license less than 60 days prior to the expiration date of the license sought to be modified, and an application for renewal of said license is granted subsequent or prior thereto (but within 30 days of expiration of the present license) the modified license as well as the renewal license shall be issued to conform to the combined action of the Commission.

§ 3.720 *Renewal of license.* (a) Unless otherwise directed by the Commission, each application for renewal of an international broadcast station license shall be filed at least 60 days prior to the expiration date of the license sought to be renewed (FCC Form 311). No application for renewal of license of an international broadcast station will be considered unless there is on file with the Commission, the information currently required by §§ 1.341–1.344 of this chapter reference to which by date and file number shall be included in the application.

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[1] Suspended until further order of the Commission by Order No. 108, dated and effective December 22, 1942.

(b) Whenever the Commission regards an application for a renewal of an international broadcast station license as essential to the proper conduct of a hearing or investigation, and specifically directs that it be filed by a date certain, such application shall be filed within the time thus specified. If the licensee fails to file such application within the prescribed time, the hearing or investigation shall proceed as if such renewal application had been received.

§ 3.721 [Reserved.]

§ 3.722 *Repetitious applications.* (a) Where an applicant has been afforded an opportunity to be heard with respect to a particular application for a new international broadcast station, or for change of existing service or facilities, and the Commission has, after hearing or default, denied the application or dismissed it with prejudice, the Commission will not consider another application for a station of the same class to serve in whole or in part the same area, by the same applicant or by his successor or assignee, or on behalf of or for the benefit of the original parties in interest, until after the lapse of 12 months from the effective date of the Commission's order.

(b) Where an appeal has been taken from the action of the Commission in denying a particular application, another application for the same class of broadcast station and for the same area, in whole or in part, filed by the same applicant or by his successor or assignee, or on behalf or for the benefit of the original parties in interest, will not be considered until the final disposition of such appeal.

§ 3.723 *Assignment or transfer of control*—(a) *Voluntary.* Application for consent to voluntary assignment of an international station construction permit or license or for consent to voluntary transfer of control of a corporation holding an international station construction permit or license shall be filed with the Commission on **FCC Form 314** (Assignment of License), **FCC Form 315** (Transfer of Control) or **FCC Form 316** (Short Form) at least 60 days prior to the contemplated effective date of assignment or transfer of control.

(b) *Pro forma.* Assignment or transfer applications shall be filed on **FCC Form 316** where:

(1) There is an assignment from an individual or individuals (including partnerships) to a corporation owned and controlled by such individuals or partnerships without any substantial change in their relative interests;

(2) There is an assignment from a corporation to its individual stockholders without effecting any substantial change in the disposition of their interests;

(3) There is an assignment or transfer by which certain partners or stockholders retire but no new ones are brought in, provided that the interest transferred is not a controlling one;

(4) There is a corporate reorganization which involves no substantial change in the beneficial ownership of the corporation;

(5) There is an involuntary transfer to an Executor, Administrator or other court appointed officer caused by death or legal disability except that this form does not cover assignments (or transfers) from the Executor, Administrator or other court appointed officers to the ultimate beneficiary;

(6) There is an assignment or transfer from a corporation to a wholly owned subsidiary thereof or vice versa, or where there is an assignment from a corporation to a corporation owned or controlled by the assignor stockholders without substantial change in their interests;

(7) There is an assignment of less than a controlling interest in a partnership.

(c) *Involuntary.* In the event of the death or legal disability of a permittee or licensee, or a member of a partnership, or a person directly or indirectly in control of a corporation, which is a permittee or licensee:

(1) The Commission shall be notified in writing promptly of the occurrence of such death or legal disability, and

(2) Within thirty days after the occurrence of such death or legal disability, application on **FCC Form 316** shall be filed for consent to involuntary assignment of such international station permit or license or for involuntary transfer of control of such corporation to a person or entity legally qualified to succeed to the foregoing interests under the laws of the place having jurisdiction over the estate involved.

RULES RELATING TO LICENSING POLICIES

§ 3.731 *Licensing requirements; necessary showing.* A license for an international broadcast station will be issued only after a satisfactory showing has been made in regard to the following, among others:

(a) That there is a need for the international broadcast service proposed to be rendered.

(b) That the necessary program sources are available to the applicant to render an effective international service.

(c) That the technical facilities are available on which the proposed service can be rendered without causing interference to established international stations having prior registration and occupancy in conformity with existing international conventions or regulations on the frequency requested.[2]

(d) That directive antennas and other technical facilities will be employed to deliver maximum signals to the country or countries for which the service is designed.

(e) That the production of the program service and the technical operation of the proposed station will be conducted by qualified persons.

(f) That the applicant is technically and financially qualified and possesses adequate technical facilities to carry forward the service proposed.

(g) That the public interest, convenience and necessity will be served through the operation of the proposed station.

RULES RELATING TO EQUIPMENT

§ 3.751 *Power requirement.* No international broadcast station will be authorized to install equipment or licensed for operation with a power less than 50 kilowatts.

§ 3.752 *Frequency control.* The transmitter of each international broadcast station shall be equipped with automatic frequency control apparatus so designed and constructed that it is capable of maintaining the operating frequency within plus or minus 0.005 percent of the assigned frequency.

§ 3.753 *Antenna.* The antenna shall be so designed and operated that the signal (field intensity) toward the specific foreign country or countries served shall be at least 3.16 times the average effective signal from the station (power gain of 10).

§ 3.754 *Frequency monitors.* (a) The licensee of each international broadcast station shall operate at the transmitter a frequency monitor independent of the frequency control of the transmitter.

(b) The frequency monitor shall be designed and constructed in accordance with good engineering practice and shall have an accuracy sufficient to determine that the operating frequency is within one-half of the allowed tolerance.

§ 3.755 *Modulation monitors.* The licensee of each international broadcast station shall have in operation at the transmitter a modulation monitor.

§ 3.756 *Required transmitter performance.* The construction, installation, operation, and performance of the international broadcast transmitter system shall be in accordance with good engineering practice.

§ 3.757 *Auxiliary transmitters.* Upon showing that a need exists for the use of auxiliary transmitters in addition to the regular transmitters of an international broadcast station, a license therefor may be issued provided that:

(a) Auxiliary transmitters may be installed either at the same location as the main transmitters or at another location.

(b) A licensed operator shall be in control whenever auxiliary transmitters are placed in operation.

(c) The auxiliary transmitters shall be maintained so that they may be put into immediate operation at any time for the following purposes:

(1) The transmission of the regular programs upon the failure of the main transmitters.

(2) The transmission of regular programs during maintenance or modifica-

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[2] See General Radio Regulations annexed to the International Telecommunications Convention, Madrid, 1932, art. 7. Prior to September 1, 1939, and thereafter see Cairo General Radio Regulations, art. 7, annexed to the International Telecommunications Conferences, Cairo, Egypt, 1938. Also, see list of assignments to international channels prepared by the Bureau of the International Telecommunications Union, Berne, Switzerland.

tion[3] work on the main transmitter, necessitating discontinuance of its operation for a period not to exceed 5 days.

(3) Upon request by a duly authorized representative of the Commission.

(d) The auxiliary transmitters shall be tested at least once each week to determine that they are in proper operating condition and that they are adjusted to the proper frequency, except that in case of operation in accordance with paragraph (c) of this section during any week, the test in that week may be omitted provided the operation under paragraph (c) is satisfactory. A record shall be kept of the time and result of each test operating under paragraph (c).

(e) The auxiliary transmitters shall be equipped with satisfactory control equipment which will enable the maintenance of the frequency emitted by the station within the limits prescribed by the regulations in this part.

(f) The operating power of an auxiliary transmitter may be less than the authorized power of the main transmitters, but in no event shall it be greater than such power.

§ 3.758 *Alternate main transmitters.* The licensee of an international broadcast station may be licensed for alternate main transmitters provided that a technical need for such alternate transmitters is shown and that the following conditions are met:

(a) Both transmitters are located at the same place.

(b) Both transmitters shall have the same power rating.

(c) Both transmitters shall meet the construction, installation, operation, and performance requirements of good engineering practice.

§ 3.759 *Changes in equipment and antenna system.* Licensees of international broadcast stations shall observe the following provisions with regard to changes in equipment and antenna system:

(a) No changes in equipment shall be made:

(1) That would result in the emission of signals outside of the authorized channel.

(b) Specific authority, upon filing formal application (FCC Form 312) therefor, is required for any of the following changes:

(1) Changes involving an increase or decrease in the power rating of the transmitters.

(2) A replacement of the transmitters as a whole.

(3) Change in the location of the transmitting antenna

(4) Change in location of main studio, if it is proposed to move the main studio to a different city from that specified in the license.

(5) Change in the power delivered to the antenna.

(6) Change in frequency control and/or modulation system.

(c) Other changes, except as above provided for in this section may be made at any time without the authority of the Commission, provided that the Commission shall be promptly notified thereof and such changes shall be shown in the next application for renewal of license.

RULES RELATING TO TECHNICAL OPERATION

§ 3.761 *Time of operation.* (a) All international broadcast stations will be licensed for unlimited time operation except as may be directed by the Commission from time to time. In an emergency however, when, due to causes beyond the control of the licensee, it becomes impossible to continue operation, the station may cease operation for a period not to exceed 10 days, provided that the Commission and the Engineer in Charge of the radio district in which the station is located shall be notified in writing immediately after the emergency develops.

(b) Persons desiring to enter into a voluntary sharing arrangement of an international channel may file application therefor with the Commission. Copies of the time-sharing agreement should be filed with the application.

§ 3.762 *Station inspection.* The licensee of any international broadcast station shall make the station available for inspection by representatives of the Commission at any reasonable hour.

§ 3.763 *Station license, posting of.* The original of each station license shall be posted in the transmitter room.

§ 3.764 *Operator requirements.* One or more licensed radiotelephone first class operators shall be on duty at the place where the transmitting apparatus of each station is located and in actual charge thereof whenever it is being operated. The original license (or FCC Form 759) of each station operator shall be posted at the place where he is on duty. The licensed operator on duty and in charge of an international broadcast transmitter may, at the discretion of the licensee, be employed for other duties or for the operation of another station or stations in accordance with the class of operator's license which he holds and by the rules and regulations governing such stations. However, such duties shall in nowise interfere with the operation of the broadcast transmitter.

§ 3.765 *Operating power; how determined.* The operating power, and its maintenance, of each international broadcast station shall be in conformity with good engineering practice.

§ 3.766 *Modulation.* The percentage of modulation of the transmissions shall be maintained as high as possible consistent with good quality of transmission and good broadcast practice and in no case less than 50 percent nor more than 100 percent on peaks of frequent recurrence during any selection which normally is transmitted at the highest level of the program under consideration.

§ 3.767 *Frequency tolerance.* The operating frequencies of international broadcast station transmitters shall be maintained within 0.005% of the assigned frequencies.

§ 3.768 Antenna structure, marking and lighting. Where an antenna structure(s) is required to be painted or lighted see § 17.37, *Inspection of tower lights and associated control equipment;* § 17.39, *Cleaning and repainting;* § 17.40 *Time when lights shall be exhibited;* § 17.41, *Spare lamps;* and § 17.42, *Lighting equipment;* of Part 17 of this chapter (Construction, Marking and Lighting of Antenna Structures).

§ 3.769 *Discontinuance of operation.* The licensee of each station, except stations operating in Alaska, shall notify the Engineer in Charge of the radio district in which the station is located of any of the following changes in the status of such station at least two days before such change:

(a) Temporary discontinuance of operation for a period of ten days or more;

(b) The date of resumption of operation after temporary discontinuance of operation for a period of ten days or more;

(c) Permanent discontinuance of operation.

In all cases of permanent discontinuance of operation the licensee shall, in addition to notifying the Engineer in Charge of the radio district in which the station is located of intention to discontinue operation, immediately forward the station license to the Washington, D. C., office of the Commission for cancellation.

OTHER RULES RELATING TO OPERATION

§ 3.781 *Logs.* The licensee or permittee of each international broadcast station shall maintain program and operating logs in the following manner:

(a) In the program log:

(1) An entry of the time each station identification announcement (call letters and location) is made.

(2) An entry briefly describing each program broadcast, such as "music", "drama", "speech", etc., together with the name or title thereof, language, and the sponsor's name, with the time of the beginning and ending of the complete program.

(3) An entry showing, for each program of network origin, the name of the network originating the program.

(b)[4] Each licensee of an international broadcast station shall make verbatim mechanical records of all international programs transmitted.

(1) The mechanical records, and such manuscripts, transcripts, and translations of international broadcast programs as are made shall be kept by the licensee for a period of 2 years after the date of broadcast and shall be furnished the Commission or be available for inspection by representatives of the Commission upon request.

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[3] This includes the equipment changes which may be made without authority as set forth elsewhere in the Rules and Regulations or as authorized by the Commission by letter or by construction permit. Where such operation is required for periods in excess of 5 days, request therefor shall be in accordance with § 1.324 of this chapter.

[4] Suspended until further order of the Commission by Order No. 108, dated and effective December 22, 1942.

(2) If the broadcast is in a language other than English the licensee shall furnish the Commission upon request such record and scripts together with complete translations in English.

(c) In the operating log:

(1) An entry of the time the station begins to supply power to the antenna, and the time it stops.

(2) An entry of the time the program begins and ends.

(3) An entry of each interruption to the carrier wave, its cause, and duration.

(4) An entry of the following each 30 minutes:

(i) Operating constants of last radio stage of the transmitter (total plate current and plate voltage).

(ii) Frequency monitor reading.

(5) A log must be kept of all experimental operation. If the entries required above are not applicable thereto, then the entries shall be made so as to fully describe the operation.

(d) Where an antenna structure(s) is required to be illuminated see § 17.38, *Recording of tower light inspections in the station record*, of Part 17 of this chapter (Construction, Marking and Lighting of Antenna Structures).

§ 3.872 *Logs; retention of.* Logs of international broadcast stations shall be retained by the licensee or permittee for a period of two years, *Provided, however*, That logs involving communications incident to a disaster or which include communications incident to or involved in an investigation by the Commission and concerning which the licensee or permittee has been notified, shall be retained by the licensee or permittee until he is specifically authorized in writing by the Commission to destroy them: *Provided, further*, That logs incident to or involved in any claim or complaint of which the licensee or permittee has notice shall be retained by the licensee or permittee until such claim or complaint has been fully satisfied or until the same has been barred by statute limiting the time for the filing of suits upon such claims.

§ 3.783 *Logs; by whom kept.* Each log shall be kept by the person or persons competent to do so, having actual knowledge of the facts required, who shall sign the log when starting duty and again when going off duty. The logs shall be made available upon request by an authorized representative of the Commission.

§ 3.784 *Log form.* The log shall be kept in an orderly manner, in suitable form, and in such detail that the data required for the particular class of station concerned are readily available. Key letters or abbreviations may be used if proper meaning or explanation is contained elsewhere in the log.

§ 3.785 *Correction of logs.* No log or portion thereof shall be erased, obliterated, or willfully destroyed within the period of retention provided by the rules. Any necessary correction may be made only by the person originating the entry who shall strike out the erroneous portion, initial the correction made, and indicate the date of correction.

§ 3.786 *Rough logs.* Rough logs may be transscribed into condensed form, but in such case, the original log or memoranda and all portions thereof shall be preserved and made a part of the complete log.

§ 3.787 *Station identification.* (a) A licensee of an international broadcast station shall make station identification announcement (call letters and location), at the beginning and ending of each time of operation and during the operation on the hour.

(b) Station identification, program announcements, and oral continuity shall be made with international significance (language particularly) which is designed for the foreign country or countries for which the service is primarily intended.

(c) Identification announcements during operation need not be made when to make such announcement would interrupt a single consecutive speech, play, religious service, symphony concert, or any type of production. In such cases the identification announcement shall be made at the first interruption of the entertainment continuity and at the conclusion thereof.

§ 3.788 *Service; commercial or sponsored program.* (a)[5] A licensee of an international broadcast station shall render only an international broadcast service which will reflect the culture of this country and which will promote international goodwill, understanding, and cooperation. Any program solely intended for, and directed to an audience in the continental United States does not meet the requirements for this service.

(b) Such international broadcast service may include commercial or sponsored programs: *Provided*, That:

(1) Commercial program continuities give no more than the name of the sponsor of the program and the name and general character of the commodity, utility or service, or attraction advertised.

(2) In case of advertising a commodity, the commodity is regularly sold or is being promoted for sale on the open market in the foreign country or countries to which the program is directed in accordance with paragraph (c) of this section.

(3) In case of advertising an American utility or service to prospective tourists or visitors to the United States, the advertisement continuity is particularly directed to such persons in the foreign country or countries where they reside and to which the program is directed in accordance with paragraph (c) of this section.

(4) In case of advertising an international attraction (such as a world fair, resort, spa, etc.) to prospective tourists or visitors to the United States, the oral continuity concerning such attraction is consistent with the purpose and intent of this section.

(5) In case of any other type of advertising, such advertising is directed to the foreign country or countries and to which the program is directed in accordance with paragraph (c) of this section and is consistent with the purpose and intent of this section.

(c) The areas or zones established to be served by international broadcast stations are the foreign countries of the world, and directive antennas shall be employed to direct the signals to specific countries.

(d) An international broadcast station may transmit the program of a standard broadcast station or network system: *Provided*, The conditions in paragraph (b) of this section in regard to any commercial continuities are observed and when station identifications are made, only the call letter designation of the international station is given on its assigned frequency: *And provided further*, That in the case of chain broadcasting[6] the program is not carried simultaneously by another international station (except another station owned by the same licensee operated on a frequency in a different group to obtain continuity of signal service), the signals from which are directed to the same foreign country or countries.

§ 3.789 *Sponsored programs; announcement of.* (a) In the case of each program for the broadcasting of which money, services, or other valuable consideration is either directly or indirectly paid or promised to, or charged or received by, any radio broadcast station, the station broadcasting such program shall make, or cause to be made, an appropriate announcement that the program is sponsored, paid for, or furnished, either in whole or in part.

(b) In the case of any political program or any program involving the discussion of public controversial issues for which any films, records, transcriptions, talent, scripts, or other material or services of any kind are furnished, either directly or indirectly, to a station as an inducement to the broadcasting of such program, an announcement shall be made both at the beginning and conclusion of such program on which such material or services are used that such films, records, transcriptions, talent, scripts, or other material or services have been furnished to such station in connection with the broadcasting of such program: *Provided, however*, That only one such announcement need be made in the case of any such program of 5 minutes' duration or less, which announcement may be made either at the beginning or conclusion of the program.

(c) The announcement required by this section shall fully and fairly disclose the true identity of the person or persons by whom or in whose behalf such payment is made or promised, or from whom or in whose behalf such services or other valuable consideration is received, or by whom the material or services referred to in paragraph (b) of this section are furnished. Where an agent or other person contracts or otherwise makes arrangements with a station on behalf of another, and such fact is known to the station, the announcement shall disclose the identity of the person or persons in whose behalf such agent is acting instead of the name of such agent.

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[5] The Commission on July 14, 1939, suspended the operation of § 3.788 (a) until further order of the Commission.

[6] See sec. 3 (p) of the Communications Act of 1934 for the definition of "chain broadcasting."

(d) In the case of any program, other than a program advertising commercial products or services, which is sponsored, paid for or furnished, either in whole or in part, or for which material or services referred to in paragraph (b) of this section are furnished, by a corporation, committee, association or other unincorporated group, the announcement required by this section, shall disclose the name of such corporation, committee, association, or other unincorporated group. In each such case the station shall require that a list of the chief executive officers or members of the executive committee or of the board of directors of the corporation, committee, association, or other unincorporated group shall be made available for public inspection at one of the international broadcast stations carrying the program.

(e) In the case of programs advertising commercial products or services, an announcement stating the sponsor's corporate or trade name or the name of the sponsor's product, shall be deemed sufficient for the purposes of this section and only one such announcement need be made at any time during the course of the program.

§ 3.790 *Rebroadcast.* (a) The licensee of an international broadcast station may, without further authority of the Commission, rebroadcast the program of a United States standard, noncommercial educational, or FM broadcast station, provided the Commission is notified of the call letters of each station rebroadcast and the licensee certifies that express authority has been received from the licensee of the station originating the program.[7][8] (See § 3.788 concerning commercial announcements.)

(b) No licensee of an international broadcast station shall rebroadcast the programs of any other class of United States radio station without written authority having first been obtained from the Commission.

(c) A licensee of an international broadcast station may authorize the rebroadcast of its programs by any station outside the limits of the North American continent without permission from the Commission: *Provided*, That the station rebroadcasting the programs cannot be received consistently in the United States.

§ 3.791 *Supplemental report with renewal application.*[9] A supplemental report shall be filed with and made a part of each application for renewal of license and shall include statements of the following:

(a) The number of hours operated on each frequency.

(b) A list of programs transmitted of special international interest.

(c) Outline of reports of reception and interference and conclusions with regard to propagation characteristics of the frequency assigned.

SUBPART G—RULES GOVERNING CONELRAD

SCOPE AND OBJECTIVE

§ 3.901 *Scope of subpart.* This subpart applies to all standard, FM and TV broadcast stations and is for the purpose of providing for operation of certain stations located within the Continental United States during periods of enemy air attack or imminent threat thereof.

§ 3.902 *Object of plan.* The aim of this plan is to minimize the navigational aid that may be obtained from the continued operation of broadcast stations while at the same time providing for transmission of civil defense information to the public. During CONELRAD radio alert periods, when not broadcasting civil defense programs or alert or all-clear notification messages, these stations may, on their own responsibility, broadcast such other programs as they may desire.

DEFINITIONS

§ 3.910 *CONELRAD.* The word CONELRAD is a contraction of the words Control of Electromagnetic Radiation and is the general name given to required procedures under authority of Executive Order 10312 dated December 10, 1951.

§ 3.911 *Air Defense Control Center (ADCC).* An air operations center from which an air division (defense) commander supervises and coordinates air defense activities within an air defense sector, including dissemination of warnings, identification and security control of air traffic and utilization of available combat forces in support of the national air defense effort.

§ 3.912 *Basic key station.* A station that receives the radio alert by telephone directly from the ADCC. Basic key stations relay radio alerts to other stations by radio and by telephone.

§ 3.913 *Relay key station.* A station that receives the radio alert by telephone or radio broadcast from a basic key station or other relay key station. Relay key stations pass the radio alert on to other stations by radio broadcast or telephone.

§ 3.914 *Skywave key station.* A station designated to disseminate a radio alert by broadcast primarily during the experimental period as an alternate for local key stations which may not be in operation. It will normally be capable of disseminating the alert over a wide area by means of skywave transmission.

§ 3.915 *Radio alert.* The radio alert is the Department of Defense order to operate stations in accordance with CONELRAD requirements for a period of time, as determined by the Air Division Commander or higher military authority.

§ 3.916 *Radio all clear.* The radio all clear is the Department of Defense order to discontinue CONELRAD requirements, as imposed by an outstanding radio alert, with authorization to return to normal operation. It is initiated by the Air Division Commander or higher military authority.

§ 3.917 *Cluster.* A cluster is a group of broadcast stations serving a single area, all operating on the same CONELRAD system frequency. All stations in a cluster will be inter-connected by wire lines and will carry a common program.

§ 3.918 *Sequential control lines.* Sequential control lines are the wire lines inter-connecting the several stations in a cluster. By means of a mechanical, manual or electronic device at a central control point, the stations in a cluster are turned on and off in sequence over the circuits provided by the sequential control lines. In some cases these lines may also carry the cluster program.

§ 3.919 *CONELRAD manual.* The CONELRAD manual is the document containing the detailed description of how broadcast stations will be alerted and operated in the CONELRAD system. The manual will be subject to modification from time to time as experience indicates a need for such changes.

SUPERVISION

§ 3.920 *Zones.* CONELRAD activities under the authority of FCC are under the immediate supervision of three FCC Zone Supervisors[1] whose respective zones are coextensive with the three Air Defense Force Areas.

§ 3.921 *Divisions.* Each zone is divided into several divisions corresponding to the USAF Air Divisions. An FCC Coordinating Engineer is assigned to each Air Division and has responsibility under the Zone Supervisor for all CONELRAD activities under the authority of FCC in his division.

RADIO ALERTS

§ 3.930 *Notification of a radio alert.* (a) All notifications of radio alerts and all clears shall be issued by the Air Defense Control Center(s) (ADCC) under the authority of the Air Division Commander or his duly authorized representative, to all basic key stations. All relay key stations will, in turn be notified by the basic key stations or other relay key stations. The remaining stations will then be notified by basic key stations or relay key stations. These notifications will be accomplished either by telephone messages or by radio broadcast.

(b) During the experimental period many of the regular key stations may be off the air. All standard, FM and TV stations will be supplied with the list of skywave key stations at least one of which must be monitored during any period of operation when the regularly used key station is not on the air.

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[7] The broadcasting of a program relayed by a remote pickup broadcast station is not considered a rebroadcast.

[8] The notice and certification of consent must be given within 3 days of any single rebroadcast, but in case of the regular practice of rebroadcasting certain programs of another broadcast station several times during a license period, notice and certification of consent must be given for the ensuing license period with the application for renewal of license, or at the beginning of such rebroadcast practice if begun during a license period.

[9] Suspended until further order of the Commission by Order No. 108, dated and effective December 22, 1942.

[1] Each broadcast station will be furnished the name and address of the Zone Supervisor of its Zone.

§ 3.931 *Reception of a radio alert.* All standard, FM and TV broadcast stations, including basic key and relay key stations, must install the necessary equipment to receive notifications of radio alerts and radio all clears by means of reception of radio broadcast messages, and must maintain this equipment in a state of readiness for reception, including arrangements for human listening watch or automatic alarm devices or both. Such equipment should have its termination at the transmitter control location.

§ 3.932 *Operation during a radio alert.* (a) Immediately upon receipt of a radio alert, either by radio broadcast or telephone, all standard, FM and TV broadcast stations, including such stations operating under equipment or program test authority, will follow the prescribed procedure and transmit an approved sign-off message as set forth in the CONELRAD Manual For Broadcast Stations, then remove the transmitter from the air.

(b) Those stations which are authorized to participate in the operating system will immediately take necessary steps and begin operations on assigned frequencies in accordance with the terms of their CONELRAD authorizations and current operating instructions. All other broadcast stations will observe radio silence until the radio all clear.

(c) No identification may be broadcast between the time the radio alert is received and the time the radio all clear is announced, unless expressly authorized by the FCC. The transmission of any information which would serve to identify the geographical location of the station is prohibited.

(d) A station operating in the CONELRAD system may transmit in accordance with its CONELRAD authorization during a radio alert beyond its normal hours and nothing in its regular license or other instrument of authorization shall prevent such operation in the CONELRAD system.

(e) Prior to commencing routine operation or originating any emissions under program test, equipment test, experimental or other authorization or for any other purpose, licensees or permittees shall first ascertain whether a state of radio alert exists and if so shall refrain from operation or operate in the CONELRAD system whichever is appropriate.

RADIO ALL CLEAR

§ 3.940 *Notification of a radio all clear.* The radio all clear notification will be transmitted through the same channels as the radio alert. Stations operating in the CONELRAD system will transmit the radio all clear message on the CONELRAD system frequency. Key stations will, as soon as possible thereafter, follow the prescribed procedure and broadcast the radio all clear message on their regular operating frequency. All stations, including FM and TV stations, upon resuming regular operation will follow the prescribed procedure and immediately broadcast the radio all clear message.

SYSTEM OPERATION

§ 3.950 *Procedure.* Each broadcast station permitted to operate during a radio alert must observo operating procedures for the mode of operation to which it is assigned, as set forth in detail in the CONELRAD Manual For Broadcast Stations.

§ 3.951 *Participation.* (a) Any standard broadcast station desiring to participate in a CONELRAD operating system should contact the Zone Supervisor, indicate the station's willingness to make such technical modification of the station equipment as might be necessary to permit operation on a system frequency and with such power limitations as might be necessary. The Commission will then issue a CONELRAD authorization to the station specifying the frequency to be used by the station. Stations which have indicated a willingness to participate in CONELRAD on a voluntary basis prior to the effective date of this rule need not take any further steps.

(b) At such time as technical consideration may warrant the inclusion of FM and TV broadcast stations within the operating CONELRAD system, appropriate announcement will be made by the Commission and application for participation made as above set forth.

(c) Any station participating in CONELRAD system operations may withdraw from the system by giving thirty days' notice to the FCC Zone Supervisor in writing and by submitting its CONELRAD authorization for cancellation.

(d) Broadcast stations are specifically exempt from complying with § 3.57 while operating under their CONELRAD authorization.

TESTS

§ 3.960 *Alerting system.* Tests of the alerting system will be conducted periodically.

§ 3.961 *Sequential control lines.* Sequential control and program lines must be tested at frequent intervals and results reported in the prescribed manner to the FCC Zone Supervisor.

§ 3.962 *Entire system.* Tests of the entire system will be conducted from time to time. During such tests, all stations which are authorized to operate in the CONELRAD system will operate in accordance with terms of the CONELRAD authorization. Other stations will not be required to go off the air during such tests but will be subject to any interference which might result from the CONELRAD operation. Such tests will be scheduled to take place during the experimental period. Industry representatives will be consulted prior to conducting CONELRAD system tests to obtain views relative to the action and to coordinate the activity.

§ 3.963 *Equipment.* The licensee of each station authorized to participate in CONELRAD system operation shall make such tests of his equipment as may be necessary to assure it is ready for instant use.

§ 3.964 *Log entries.* Appropriate entries of all tests shall be made in the station log.

DRILLS

§ 3.970 *Notification of a drill.* At some time it may be necessary to conduct an Air Defense Drill under conditions of simulated attack. Industry representatives will be consulted prior to conducting CONELRAD drills to obtain views relative to the action and to coordinate the activity. Such drills will only be called when the Department of Defense, the Office of Defense Mobilization, and the Federal Communications Commission concurrently agree that the drill is necessary. All stations will be notified well in advance of such a drill.

§ 3.971 *Operation during a drill.* During a drill, all standard, FM and TV broadcast stations will take the same steps as such stations would be required to take in the event of an actual radio alert under this part of the rules and current operating instructions as set forth in the CONELRAD Manual For Broadcast Stations, except for special drill messages.

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AMENDMENT NO. 3-19

PART 3 - RULES GOVERNING RADIO BROADCAST SERVICES.

(The nineteenth amendment to edition revised to June 30, 1953.)

Directions for altering text:

1. Section 3.190 (c) is amended to read as follows:

(c) *Rates and practices.* (1) The rates, if any, charged all such candidates for the same office shall be uniform and shall not be rebated by any means direct or indirect. A candidate shall, in each case, be charged no more than the rate the station would charge if the candidate were a commercial advertiser whose advertising was directed to promoting its business within the same area as that encompassed by the particular office for which such person is a candidate. All discount privileges otherwise offered by a station to commercial advertisers shall be available upon equal terms to all candidates for public office.

(2) In making time available to candidates for public office no licensee shall make any discrimination between candidates in charges, practices, regulations, facilities, or services for or in connection with the service rendered pursuant to this part, or make or give any preference to any candidate for public office or subject any such candidate to any prejudice or disadvantage; nor shall any licensee make any contract or other agreement which shall have the effect of permitting any legally qualified candidate for any public office to broadcast to the exclusion of other legally qualified candidates for the same public office.

2. Section 3.290 (c) is amended to read as follows:

(c) *Rates and practices.* (1) The rates, if any, charged all such candidates for the same office shall be uniform and shall not be rebated by any means direct or indirect. A candidate shall, in each case, be charged no more than the rate the station would charge if the candidate were a commercial advertiser whose advertising was directed to promoting its business within the same area as that encompassed by the particular office for which such person is a candidate. All discount privileges otherwise offered by a station to commercial advertisers shall be available upon equal terms to all candidates for public office.

(2) In making time available to candidates for public office no licensee shall make any discrimination between candidates in charges, practices, regulations, facilities, or services for or in connection with the service rendered pursuant to this part, or make or give any preference to any candidate for pubic office or subject any such candidate to any prejudice or disadvantage; nor shall any licensee make any contract or other agreement which shall have the effect of permitting any legally qualified candidate for any public office to broadcast to the exclusion of other legally qualified candidates for the same public office.

3. Section 3.657 (c) is amended to read as follows:

(c) *Rates and practices.* (1) The rates, if any, charged all such candidates for the same office shall be uniform and shall not be rebated by any means direct or indirect. A candidate shall, in each case, be charged no more than the rate the station would charge if the candidate were a commercial advertiser whose advertising was directed to promoting its business within the same area as that encompassed by the particular office for which such person is a candidate. All discount privileges otherwise offered by a station to commercial advertisers shall be available upon equal terms to all candidates for public office.

(2) In making time available to candidates for public office no licensee shall make any discrimination between candidates in charges, practices, regulations, facilities, or services for or in connection with the service rendered pursuant to this part, or make or give any preference to any candidate for public office or subject any such candidate to any prejudice or disadvantage; nor shall any licensee make any contract or other agreement which shall have the effect of permitting any legally qualified candidate for any public office to broadcast to the exclusion of other legally qualified candidates for the same public office.

NOTE: The above amendment was adopted by the Commission September 2, 1954 (FCC 54-1123; Docket No. 11092); published in the Federal Register September 11, 1954 (p. 5894); to be effective immediately.

FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

AMENDMENT NO. 3-3

PART 3 - RULES GOVERNING RADIO BROADCAST SERVICES.
(The third amendment to edition revised to June 30, 1953.)

Incorporated herein for convenience are all amendments to the above-entitled edition of Part 3 adopted between November 7, 1953 and December 15, 1953, together with adoption, publication and effective dates for each amendment.

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1. The following amendments were adopted November 25, 1953; published in the Federal Register December 3, 1953 (p. 7796); effective January 4, 1954:

(a) Amend Section 3.35 to read as follows:

§ 3.35 *Multiple ownership.* No license for a standard broadcast station shall be granted to any party (including all parties under common control.[12]) if:

(a) Such party directly or indirectly owns, operates or controls another standard broadcast station, a substantial portion of whose primary service area would receive primary service from the station in question, except upon a showing that public interest, convenience and necessity will be served through such multiple ownership situation; or

(b) Such party, or any stockholder, officer or director of such party, directly or indirectly owns, operates, controls, or has any interest in, or is an officer or director of any other standard broadcast station if the grant of such license would result in a concentration of control of standard broadcasting in a manner inconsistent with public interest, convenience, or necessity. In determining whether there is such a concentration of control, consideration will be given to the facts of each case with particular reference to such factors as the size, extent and location of areas served, the number of people served, classes of stations involved and the extent of other competitive service to the areas in question. The Commission, however, will in any event consider that there would be such a concentration of control contrary to the public interest, convenience or necessity for any party or any of its stockholders, officers or directors to have a direct or indirect interest in, or be stockholders, officers, or directors of, more than seven standard broadcast stations.[13]

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[12] The word "control" as used herein is not limited to majority stock ownership, but includes actual working control in whatever manner exercised.

[13] In applying the foregoing provisions to the stockholders of a corporation which has more than 50 voting stockholders, only those stockholders need be considered who are officers or directors or who directly or indirectly own 1 percent or more of the outstanding voting stock.

(b) Amend Section 3.240 to read as follows:

§ 3.240 *Multiple ownership.* No license for an FM broadcast station shall be granted to any party (including all parties under common control [13]) if:

(a) Such party directly or indirectly owns, operates, or controls another FM broadcast station which serves substantially the same service area; or

(b) Such party, or any stockholder, officer or director of such party, directly or indirectly owns, operates, controls, or has any interest in, or is an officer or director of any other FM broadcast station if the grant of such license would result in a concentration of control of FM broadcasting in a manner inconsistent with public interest, convenience, or necessity. In determining whether there is such a concentration of control, consideration will be given to the facts of each case with particular reference to such factors as the size, extent and location of areas served, the number of people served, classes of stations involved, and the extent of other competitive service to the areas in question. The Commission, however, will in any event consider that there would be such a concentration of control contrary to the public interest, convenience or necessity for any party or any of its stockholders, officers or directors to have a direct or indirect interest in, or be stockholders, officers, or directors of, more than seven FM broadcast stations.[13a]

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[13] The word "control" as used herein is not limited to majority stock ownership, but includes actual working control in whatever manner exercised.

[13a] In applying the foregoing provisions to the stockholders of a corporation which has more than 50 voting stockholders, only those stockholders need be considered who are officers or directors or who directly or indirectly own 1 percent or more of the outstanding voting stock.

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3-1

12. The following amendments were adopted September 23, 1953; published in the Federal Register September 30, 1953 (p. 6242); effective October 30, 1953:

(a) Section 3.518 is amended to read as follows:

§ 3.518 *Normal license period.* (a) All noncommercial educational FM broadcast station licenses will be issued for a normal license period of three years. Licenses will be issued to expire at the hour of 3:00 a. m., e. s. t., in accordance with the following schedule and at three-year intervals thereafter.[1]

(1) For stations located in Delaware and Pennsylvania, August 1, 1954.

(2) For stations located in Maryland, District of Columbia, Virginia, West Virginia, October 1, 1954.

(3) For stations located in North Carolina, South Carolina, December 1, 1954.

(4) For stations located in Florida, Puerto Rico, and Virgin Islands, February 1, 1955.

(5) For stations located in Alabama and Georgia, April 1, 1955.

(6) For stations located in Arkansas, Louisiana, and Mississippi, June 1, 1955.

(7) For stations located in Tennessee, Kentucky, and Indiana, August 1, 1955.

(8) For stations located in Ohio and Michigan, October 1, 1955.

(9) For stations located in Illinois and Wisconsin, December 1, 1955.

(10) For stations located in Iowa and Missouri, February 1, 1956.

(11) For stations located in Minnesota, North Dakota South Dakota, Montana, and Colorado, April 1, 1956.

(12) For stations located in Kansas, Oklahoma, Nebraska, June 1, 1956.

(13) For stations located in Texas, August 1, 1956.

(14) For stations located in Wyoming, Nevada, Arizona, Utah, New Mexico, and Idaho, October 1, 1956.

(15) For stations located in California, December 1, 1953.

(16) For stations located in Washington, Oregon, Alaska, and Hawaii, February 1, 1954.

(17) For stations located in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont, April 1, 1954.

(18) For stations located in New Jersey and New York, June 1, 1954.

(b) Section 3.520 (a) is amended to read as follows:

§ 3.520 *Renewal of license.* (a) Unless otherwise directed by the Commission, each application for renewal of a noncommercial educational FM broadcast station license shall be filed at least 90 days prior to the expiration date of the license sought to be renewed (FCC Form 342).

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[1] Renewals of licenses will be granted for the period specified in the rule: *Provided, however,* That if as a result of the transition from the previous schedule to the above schedule the period for which a license is renewed is 6 months or less, the licensee may within the period 60 days to 30 days before the expiration date of such renewed license file, in lieu of renewal application (FCC Form 342), a written application under oath for the next renewal of license which shall consist of (1) a request that its license be renewed; (2) a statement that no substantial changes have been made in its operations or in its plans for future operations since its last renewal application, or if changes have been made or proposed, a statement specifying such changes; and (3) a statement that the applicant waives any claim to the use of any particular frequency or of the ether as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise. Upon review of such statements the Commission may grant a renewal of license for the full period provided for in the rule; or if the Commission requires additional information, it may require the filing of renewal application (FCC Form 342).

13. Due to an error in composition the table of frequencies in Section 3.201 was not printed in proper numerical order. For convenience, the table printed below is correct.

Frequency (Mc):	*Channel No.*	Frequency (Mc):	*Channel No.*
88.1	201	98.1	251
88.3	202	98.3	252
88.5	203	98.5	253
88.7	204	98.7	254
88.9	205	98.9	255
89.1	206	99.1	256
89.3	207	99.3	257
89.5	208	99.5	258
89.7	209	99.7	259
89.9	210	99.9	260
90.1	211	100.1	261
90.3	212	100.3	262
90.5	213	100.5	263
90.7	214	100.7	264
90.9	215	100.9	265
91.1	216	101.1	266
91.3	217	101.3	267
91.5	218	101.5	268
91.7	219	101.7	269
91.9	220	101.9	270
92.1	221	102.1	271
92.3	222	102.3	272
92.5	223	102.5	273
92.7	224	102.7	274
92.9	225	102.9	275
93.1	226	103.1	276
93.3	227	103.3	277
93.5	228	103.5	278
93.7	229	103.7	279
93.9	230	103.9	280
94.1	231	104.1	281
94.3	232	104.3	282
94.5	233	104.5	283
94.7	234	104.7	284
94.9	235	104.9	285
95.1	236	105.1	286
95.3	237	105.3	287
95.5	238	105.5	288
95.7	239	105.7	289
95.9	240	105.9	290
96.1	241	106.1	291
96.3	242	106.3	292
96.5	243	106.5	293
96.7	244	106.7	294
96.9	245	106.9	295
97.1	246	107.1	296
97.3	247	107.3	297
97.5	248	107.5	298
97.7	249	107.7	299
97.9	250	107.9	300

3. The following amendment was adopted April 7, 1954; published in the Federal Register April 14, 1954 (p. 2143); to be effective May 14, 1954:

Section 3.606(b) "Table of Assignments" is amended by the substitution of the following assignment for the city listed below:

City:	*Channel No.*
Petaluma, Calif.	68

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4. The following amendment was adopted April 7, 1954; published in the Federal Register April 21, 1954 (p. 2315); to be effective May 21, 1954.

1. Paragraph (b) of Section 3.25 is amended to read as follows:

(b) To each of the channels below there may be assigned Class I and Class II stations: 680, 710, 810, 850, 940, 1000, 1030, 1060, 1070, 1080, 1090, 1110, 1130, 1140, 1170, 1190 1500, 1510, 1520, 1530, 1540,[3b] 1550, and 1560 kilocycles.

2. Insert the following text of new footnote 3b at the bottom of the column in which Section 3.25(b) appears:

[3b] Class I and II stations on this frequency shall deliver not over 5 microvolts per meter groundwave or 25 microvolts per meter 10 percent time skywave at any point of land in the Bahama Islands, and such stations operating nighttime (i. e., sunset to sunrise at the location of the Class II station) shall be located not less than 650 miles from the nearest point of land in the Bahama Islands.

3. Delete paragraph (e) of Section 3.25.

** ** ** **

4. The following amendment was adopted December 2, 1953; published in the Federal Register December 11, 1953 (p. 8134); effective January 11, 1954:

   (a) Amend Section 3.606(b) by the addition of the following assignment under the State of New York:

City:	Channel No.
Carthage, N. Y.	7—

   (b) In Section 3.606(b), change the Channel 7 assignment in Calais, Maine from Channel 7 to Channel 7-.

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5. The following amendment was adopted December 3, 1953; published in the Federal Register December 11, 1953 (p. 8135); effective January 11, 1954:

   (a) Amend Section 3.606(b) by the addition of the following assignment under the State of Wisconsin:

City:	Channel No.
Whitefish Bay, Wis.	6

   (b) Amend Section 3.606(b) by the substitution of the following assignments for the cities listed below:

City:	Channel No.
Marquette, Mich.	6—, 17
Green Bay, Wis.	2+, 5+, 70+

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6. The following amendment was adopted December 2, 1953; published in the Federal Register December 11, 1953 (p. 8136); effective January 11, 1954:

(a) Section 3.14 is amended as follows: Add a new paragraph (r) as follows:

(r) *Blanketing.* Blanketing is that form of interference which is caused by the presence of a broadcast signal of 1 v/m or greater intensity in the area adjacent to the antenna of the transmitting station. The 1 v/m contour is referred to as the blanket contour and the area within this contour is referred to as the blanket area.

(b) Section 3.24 is amended as follows: Redesignate subparagraph (g) as (h) and add a new subparagraph (g) as follows:

(g) That the population within the 1 v/m contour does not exceed 1.0 percent of the population within the 25 mv/m contour: *Provided, however,* That where the number of persons within the 1 v/m contour is 300 or less the provisions of this paragraph are not applicable.

(c) Add a new § 3.88 as follows:

§ 3.88 *Blanketing interference.* The licensee of each broadcast station is required to satisfy all reasonable complaints of blanketing interference within the 1 v/m contour.

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FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

AMENDMENT NO. 3-5

PART 3 - RULES GOVERNING RADIO BROADCAST SERVICES.
(The fifth amendment to edition revised to June 30, 1953.)

Incorporated herein for convenience are all amendments to the above-entitled edition of Part 3 adopted between December 18, 1953 and February 4, 1954, together with adoption, publication and effective dates for each amendment.

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1. The following amendments were adopted January 18, 1954; published in the Federal Register January 21, 1954 (p. 382); effective immediately:

I. Section 3.25 (c) is amended to read as follows:

(c) For Class II stations which will not deliver over 5 microvolts per meter groundwave or 25 microvolts per meter 10 percent time skywave at any point on the Canadian border and provided that such stations operating nighttime (i. e., sunset to sunrise at the location of the Class II station) are located not less than 650 miles from the nearest Canadian border, 540 [4], 690, 740, 860, 990, 1010 [5], and 1580 kilocycles.

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[4] See § 2.104 (a) of this chapter.

[5] A station on 1010 kilocycles shall also protect a Class I–B station at Havana, Cuba.

II. The last word in § 3.165 (b) (4) is changed from "ommissions" to "emissions."

III. Section 2 A of Appendix to Subpart B—Standards of Good Engineering Practice Concerning FM Broadcast Stations is amended to read as follows:

A. Sections 3.202 to 3.205 inclusive of the rules and regulations describe the basis for allocation of FM broadcast stations, including the division of the United States into Areas I and II.

IV. Table III of Appendix II to Subpart E is amended as follows: Change the statute mile figure for 40° 18′′ to read 52.830 instead of 53.830.

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2. The following amendment was adopted January 20, 1954; published in the Federal Register January 26, 1954 (p. 429); effective February 25, 1954:

Amend Section 3.606(b) by the addition of the following assignment under the State of Michigan:

City	*Channel No.*
Parma-Onondaga [60]	10—

[60] This assignment is made subject to such action as the Commission may take in the light of the final decision of the courts on the Petition for Review filed by the Logansport Broadcasting Company (C. A. D. C. Case No. 11601).

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2. The following amendment was adopted February 24, 1954; published in the Federal Register March 3, 1954 (p. 1175); effective immediately:

> Section 3.34 (a) (16) of the Commission's rules and regulations is amended to read as follows:
>
> (16) For stations located in Washington, Oregon, Alaska, Guam and Hawaii, February 1, 1954.

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3. The following amendment was adopted March 4, 1954; published in the Federal Register March 10, 1954 (p. 1342); effective immediately:

> Table III of Appendix II to Subpart E is amended as follows: Change the statute mile figure for 40° 2′ to read "53.037" instead of "53.137".

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4. The following amendments were adopted March 11, 1954; published in the Federal Register March 17, 1954 (p. 1461); effective immediately:

> I. Section 3.26 is amended by the deletion of footnote 8.
>
> II. Section 3.29 is amended to read as follows:
>
> § 3.29 *Class IV stations on regional channels.* No license will be granted for the operation of a Class IV station on a regional channel: *Provided, however,* That Class IV stations presently authorized to operate on regional channels will not be required to change frequency, or power but will not be protected against interference from Class III stations.

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AMENDMENT NO. 3-16

Section 3.28 is amended as follows:

A. Delete paragraph (a) and substitute the following:

(a) The individual assignments of stations to channels which may cause interference to other United States stations only shall be made in accordance with the provisions of this part and the Standards of Good Engineering Practice Concerning Standard Broadcast Stations, for the respective classes of stations involved. (For determining objectionable interference, see Engineering Standards of Allocation and Field Intensity Measurements in Allocation, section C.)

B. Add a new paragraph (c) to read as follows:

(c) Upon showing that a need exists, a Class II, III, or IV station may be assigned to a channel available for such class, even though interference will be received within its normally protected contour; *Provided*: (1) No objectionable interference will be caused by the proposed station to existing stations or that if interference will be caused, the need for the proposed service outweighs the need for the service which will be lost by reason of such interference; and (2) primary service will be provided to the community in which the proposed station is to be located; and (3) the interference received does not affect more than 10 percent of the population in the proposed station's normally protected primary service area. However, in the event that the nighttime interference received by the proposed station would exceed this amount, then an assignment may be made if the proposed station would provide either a standard broadcast nighttime facility to a community not having such a facility or if 25 percent or more of the nighttime primary service area of the proposed station is without primary nighttime service.

NOTE: The above amendment was adopted by the Commission August 4, 1954; (FCC 54-1014; Docket No. 10509); published in the Federal Register August 14, 1954 (p. 5141); to be effective September 7, 1954.

AMENDMENT NO. 3-17

Section 3.606(b) "Table of Assignments" is amended by the substitution of the following assignments for the cities listed below:

City:	*Channel No.*
Port Chicago, Calif	70
Salinas-Monterey, Calif	8+, 35

NOTE: The above amendment was adopted by the Commission August 12, 1954 (FCC 54-1043; Docket No. 11093); published in the Federal Register August 20, 1954 (p. 5314); to be effective September 20, 1954.

AMENDMENT NO. 3-18

Section 3.606(b) "Table of Assignments" is amended by the substitution of the following assignments for the city listed below:

City:	*Channel No.*
Toledo, Ohio	11—, 13, *30+, 79

NOTE: The above amendment was adopted by the Commission August 12, 1954 (FCC 54-1042; Docket No. 11091); published in the Federal Register August 20, 1954 (p. 5314); to be effective September 20, 1954.

FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

AMENDMENT NO. 3-2

PART 3 - RULES GOVERNING RADIO BROADCAST SERVICES.
(The second amendment to edition revised to June 30, 1953.)

Incorporated herein for convenience are all amendments to the above-entitled edition of Part 3 adopted between October 14, 1953 and November 6, 1953, together with adoption, publication and effective dates for each amendment.

Directions for altering text:	Adoption, publication, and effective dates.
1. Substitute the following text for the present text of Section 3.33:	Adopted October 28, 1953; published in the Federal Register November 4, 1953 (p. 6968); effective immediately.

§ 3.33 *Antenna systems; showing required.* (a) An application for authority to install a broadcast antenna shall specify a definite site [11] and include full details of the antena design and expected performance.

(b) All data necessary to show compliance with the terms and conditions of the construction permit must be filed with the license application. If the station is using a directional antenna, a proof of performance must also be filed.

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[11] Site-to-be-determined applications which were on file prior to October 28, 1953, may be granted conditioned upon the filing within 60 days of such grant of an application for modification of permit specifying a site conforming to Commission's rules and standards.

Directions for altering text:	Adoption, publication, and effective dates.
2. Substitute the following text for the present text of paragraph (d) of Section 3.25:	Adopted November 5, 1953; published in the Federal Register November 14, 1953 (p. 7240); effective December 14, 1953.

(d) In continental United States, for Class II stations which operate daytime only with power not in excess of 1 kilowatt and which will not deliver over 5 microvolts per meter groundwave at any point on the Mexican border, and in Alaska, Hawaii, Puerto Rico, and the Virgin Islands, for Class II stations which will not deliver over 5 microvolts per meter groundwave or 25 microvolts per meter 10 percent time skywave at any point on the said border: 730, 800, 900, 1050.[6] 1220 [7] and 1570 kilocycles.

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[6] See North American Regional Broadcasting Agreement, Havana, 1937 (Appendix I, Table IV).

[7] See agreement with Mexico for further use of this channel.

FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

AMENDMENT NO. 3-6

PART 3 - RULES GOVERNING RADIO BROADCAST SERVICES.
(The sixth amendment to edition revised to June 30, 1953.)

Incorporated herein for convenience are all amendments to the above-entitled edition of Part 3 adopted between February 5, 1954 and March 12, 1954, together with adoption, publication and effective dates for each amendment.

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1. The following amendment was adopted February 24, 1954; published in the Federal Register March 5, 1954 (p. 1247); effective April 5, 1954:

A new section is added to Part 3 (Radio Broadcast Services) of Commission rules and regulations as follows:

§ 3.36 *Special field test authorization.* (a) Upon a showing that a need exists, a special test authorization to operate a portable or regularly authorized transmitter may be issued to persons desiring to make field intensity surveys to determine values of soil conductivity, or other factors influencing radio wave propagation, in particular areas or paths for the period necessary to conduct the survey. Such authorizations may be granted upon the following conditions:

(1) No objectionable interference will result to the operation of other authorized radio services; in this connection, the power requested shall not exceed that necessary for the purposes of the test.

(2) The carrier will be unmodulated except for half-hourly voice identification.

(3) The plate power (E_p x I_p) of the final stage of the transmitter shall not exceed authorized test power and the antenna current shall be maintained at a constant value for each phase of the test.

(4) The test equipment shall not be permanently installed, unless such installation has been separately authorized. Mobile units shall not be deemed permanent installations.

(5) The equipment must be operated by or under the personal direction of either a licensed radiotelephone first-class or second-class operator.

(6) A report, under oath, containing the measurements, their analysis and other results of the survey shall be filed with the Commission within sixty (60) days from the termination of the test authorization. The measurements taken shall be sufficiently complete, in accordance with section 2 of the Standards of Good Engineering Practice Concerning Standard Broadcast Stations, so as to permit a determination of the inverse distance field at 1 mile in pertinent directions.

(7) The plate voltage (E_p) and plate current (I_p) of the final stage of the transmitter shall be logged at half-hour intervals and at any time that such power is changed. Certified copies of such log notations shall be submitted to the Commission with the required report.

(8) Operation shall conform to the requirements of Subpart G of this part.

(b) The test equipment, installation and operation thereof need not comply with the requirements of Commission rules and standards except as specified in this section: *Provided however,* That the equipment, installation and operation shall be consistent with good engineering principles and practices.

(c) No authorization shall be issued unless the applicant for such authorization is determined to be legally qualified. Requests for authorizations to operate a transmitter under this section shall be made in writing, signed by the applicant under oath or affirmation (with no special form provided, however), and shall set forth the following information:

(1) Purpose, duration and need for the survey.

(2) Frequency, plate power and time of operation.

(3) A brief description of the test antenna system and its estimated effective field and its proposed location.

(4) In the case of a directional test antenna, an estimate of the maximum fields expected to be radiated in the direction of pertinent broadcast stations.

(5) In the case of a person who is not a licensee or permittee of this Commission the information required by section II of FCC Form 301.

(d) The authorization may be modified or terminated by notification from the Commission if in its judgment such action will promote the public interest, convenience or necessity.

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AMENDMENT NO. 3-10

The Table of Assignments contained in Section 3.606 is amended by the substitution of the following assignments for the city listed below:

City:	Channel No.
Weston, W. Va	*5, 32

NOTE: The above amendment was adopted by the Commission May 5, 1954 (FCC 54-391; Docket No. 10951); published in the Federal Register May 12, 1954 (p. 2721); to be effective June 11, 1954.

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AMENDMENT NO. 3-11

The Table of Assignments contained in Section 3.606 is amended under the State of New York as follows:

1. Delete the following:

City:	Channel No.
Schenectady (also see Albany)	35

2. Amend to read as follows:

City:	Channel No.
Albany-Schenectady-Troy	6, *17, +23—, 35, 41

NOTE: The above amendment was adopted by the Commission May 12, 1954 (FCC 54-624; Docket No. 10964); published in the Federal Register May 19, 1954 (p. 2900); to be effective June 18, 1954.

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AMENDMENT NO. 3-12

1. Section 3.192 is amended to read as follows:

§ 3.192 *Lotteries.* (a) An application for construction permit, license, renewal of license, or any other authorization for the operation of a broadcast station, will not be granted where the applicant proposes to follow or continue to follow a policy or practice of broadcasting or permitting "the broadcasting of, any advertisement of or information concerning any lottery, gift enterprise, or similar scheme, offering prizes dependent in whole or in part upon lot or chance, or any list of the prizes drawn or awarded by means of any such lottery, gift enterprise, or scheme, whether said list contains any part or all of such prizes." (See 18 U. S. C. 1304.)

(b) The determination whether a particular program comes within the provisions of paragraph (a) of this section depends on the facts of each case. However, the Commission will in any event consider that a program comes within the provisions of paragraph (a) of this section if in connection with such program a prize consisting of money or thing of value is awarded to any person whose selection is dependent in whole or in part upon lot or chance, if as a condition of winning or competing for such prize, such winner or winners are required to furnish any money or thing of value or are required to have in their possession any product sold, manufactured, furnished or distributed by a sponsor of a program broadcast on the station in question.

2. Section 3.292 is amended to read as follows:

§ 3.292 *Lotteries.* (a) An application for construction permit, license, renewal of license, or any other authorization for the operation of a broadcast station, will not be granted where the applicant proposes to follow or continue to follow a policy or practice of broadcasting or permitting "the broadcasting of, any advertisement of or information concerning any lottery, gift enterprise, or similar scheme, offering prizes dependent in whole or in part upon lot or chance, or any list of the prizes drawn or awarded by means of any such lottery, gift enterprise, or scheme, whether said list contains any part or all of such prizes." (See 18 U. S. C. 1304.)

(b) The determination whether a particular program comes within the provisions of paragraph (a) of this section depends on the facts of each case. However, the Commission will in any event consider that a program comes within the provisions of paragraph (a) of this section if in connection with such program a prize consisting of money or thing of value is awarded to any person whose selection is dependent in whole or in part upon lot or chance, if as a condition of winning or competing for such prize, such winner or winners are required to furnish any money or thing of value or are required to have in their possession any product sold, manufactured, furnished or distributed by a sponsor of a program broadcast on the station in question.

3. Section 3.656 is amended to read as follows:

§ 3.656 *Lotteries.* (a) An application for construction permit, license, renewal of license, or any other authorization for the operation of a broadcast station, will not be granted where the applicant proposes to follow or continue to follow a policy or practice of broadcasting or permitting "the broadcasting of, any advertisement of or information concerning any lottery, gift enterprise, or similar scheme, offering prizes dependent in whole or in part upon lot or chance, or any list of the prizes drawn or awarded by means of any such lottery, gift enterprise, or scheme, whether said list contains any part or all of such prizes." (See 18 U. S. C. 1304.)

(b) The determination whether a particular program comes within the provisions of paragraph (a) of this section depends on the facts of each case. However, the Commission will in any event consider that a program comes within the provisions of paragraph (a) of this section if in connection with such program a prize consisting of money or thing of value is awarded to any person whose selection is dependent in whole or in part upon lot or chance, if as a condition of winning or competing for such prize, such winner or winners are required to furnish any money or thing of value or are required to have in their possession any product sold, manufactured, furnished or distributed by a sponsor of a program broadcast on the station in question.

NOTE: The above amendment was adopted by the Commission May 19, 1954 (FCC 54-644; Docket No. 9113); published in the Federal Register May 27, 1954 (p. 3054); to be effective June 28, 1954.

FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

AMENDMENT NO. 3-1

PART 3 - RULES GOVERNING RADIO BROADCAST SERVICES.
(The first amendment to edition revised to June 30, 1953)

Incorporated herein for convenience are all amendments to the above-entitled edition of Part 3 from the date of revision thru October 14, 1953, together with adoption, publication and effective dates for each amendment.

Directions for altering text:	Adoption, publication, and effective dates.

1. (a) The 14th line of § 3.165 (b) is changed to read: "specified in subparagraphs (1) thru (4)."

(b) The channels assigned to Binghamton, New York in § 3.606 (b) are changed to:

12—, 40—, *46+

(c) The subparagraph designator (*b*) in § 3.687 (i) is changed to (2).

Adopted October 14, 1953; published in the Federal Register October 20, 1953 (p. 6645); effective October 14, 1953.

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2. Amend Section 3.606(b) by the substitution of the following assignments for the cities listed below.

City	*Channel No.*
West Virginia: Weston	5, 32.
District of Columbia: Washington.	4—, 5—, 7+, 9—, 20+, *26—.
Florida: Gainesville	*5—, 20+.
North Carolina: Raleigh	5, *22—, 28—.
South Carolina: Charleston	2+, 5+, *13.

Adopted July 22, 1953; published in the Federal Register July 30, 1953 (p. 4459); effective August 31, 1953.

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3. Amend Section 3.606(b) by the following addition under the State of Florida:

	Channel No.
Melbourne	37—

Adopted July 30, 1953; published in the Federal Register August 7, 1953 (p. 4660); effective September 8, 1953.

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4. Amend Section 3.606(b) by changing the assignment for Springfield, Illinois to read as follows:

	Channel No.
Springfield	2+, 20+, *66+

Adopted July 30, 1953; published in the Federal Register August 7, 1953 (p. 4660); effective September 8, 1953.

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5. Amend Section 3.606(b) under the State of Oregon by the substitution of the following assignments for the cities listed below:

	Channel No.
Medford	5
Roseburg	4+, 28+

Adopted July 30, 1953; published in the Federal Register August 7, 1953 (p. 4661); effective September 8, 1953.

Directions for altering text:

Adoption, publication, and effective dat[illegible]

6. Amend Section 3.606(b) by the assignment of Channel 73+ to Harlan, Kentucky, in lieu of Channel 36-.

Adopted August 19, 1953; published in the Federal Register August 28, 1953 (p. 5146); effective September 28, 1953.

7. Amend Section 3.606(b) by the substitution of the following assignments for the cities listed below:

City:	*Channel Number*
Anderson, S. C	40, 58—
Elizabethton, Tenn	22+

Adopted August 20, 1953; published in the Federal Register August 28, 1953 (p. 5147); effective September 28, 1953.

8. Amend Section 3.606(b) by the substitution of the following assignments for the cities listed below:

City:	*Channel No.*
Oklahoma	
Ada	10+, 50+
Ardmore	12—, 55—
Elk City	15+, 26+
Texas	
Fort Worth	5+, 11—, 20—, *26—
Lubbock	5—, 11, 13—, *20, 26
Waco	10+, *28—, 34

Adopted September 3, 1953; published in the Federal Register September 11, 1953 (p. 5471); effective September 3, 1953.

9. Amend Section 3.606(b) by the following addition under the State of New York:

	Channel No.
Lake Placid	5

Change the Channel 5 assignment in Bangor, Maine, from 5— to 5+,

Change the Channel 5 assignment in Boston, Mass., from 5 to 5—.

Adopted September 9, 1953; published in the Federal Register September 17, 1953 (p. 5570); effective October 19, 1953.

10. Amend Section 3.606(b) by the following addition under the State of Indiana:

City	*Channel No.*
Hatfield, Ind	°9+

° This assignment is made subject to such action as the Commission may take in the light of the final decision of the courts on the Petition for Review filed by the Logansport Broadcasting Company (C. A. D. C. Case No. 11601).

Adopted September 18, 1953; published in the Federal Register September 24, 1953 (p. 5678); effective October 26, 1953.

11. Amend Section 3.606(b) by the substitution of the following assignments for the cities listed below:

City:	*Channel No.*
Greenfield, Mass	58—
Brattleboro, Vt	77+

Adopted September 30, 1953; published in the Federal Register October 7, 1953 (p. 6383); effective September 30, 1953.

6. Amend Section 3.606(b) as follows:

Adopted October 28, 1953; published in the Federal Register November 4, 1953 (p. 6969); effective December 4, 1953.

1. Amend the table to read:

City:	*Channel No.*
Washington, D. C.	4−, 5−, 7+, 9—, 20+, *26−, 50−

2. Change the Channel 50 assignment in Rocky Mount, N. C., from 50 to 50+.
3. Change the Channel 50 assignment in Marion, Va., from 50— to 50.

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7. Amend Section 3.606(b) by the substitution of the following assignments for the cities listed below:

Adopted November 5, 1953; published in the Federal Register November 14, 1953 (p. 7246); effective December 14, 1953.

City:	*Channel No.*
Selma, Ala	8−, 58+
Columbus, Miss	4−, 28−
West Point, Miss	56+

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8. Amend Section 3.606(b) by the substitution of the following assignments for the cities listed below:

Adopted November 5, 1953; published in the Federal Register November 14, 1953 (p. 7246); effective December 14, 1953.

City	*Channel No.*
Arkansas:	
Fort Smith	5−, *16, 22, 39
California:	
El Centro	16, 56
Merced	34−, 66
Modesto	14+, 58
Stockton	13+, 36, *42, 64
Florida:	
Clearwater	32+, 50
Daytona Beach	2−, 53
Orlando	6−, 9, 18, *24−, 47
Indiana:	
Terre Haute	10, *57+, 63−, 73+
Iowa:	
Ottumwa	15+, 63
Waterloo	7+, 16−, *22−, 46+
Kentucky:	
Lexington	18+, 27−, 64, 70+
Paducah	6+, 43, 72
Louisiana:	
Alexandria	5, 62+, 74
Bogalusa	69, 78
Lake Charles	7−, *19, 25, 60+
Maryland:	
Cumberland	17+, 30−
Hagerstown	52, 68+
Missouri:	
Cape Girardeau	12, 18+, 69
North Carolina:	
Asheville	13−, *56−, 62+, 78
Durham	11+, *40−, 46+, 73−
Fayetteville	18−, 54−
Goldsboro	34, 72
Oregon:	
Klamath Falls	2−, 17
Salem	3+, *18−, 24+, 66
Ohio:	
Gallipolis	72
South Carolina:	
Charleston	2+, 5+, *13, 17+
Florence	8−, 60
Spartanburg	7+, 17−, 74−
Texas:	
Big Spring	4−, 34+
Tyler	7, 19−, 72
Washington:	
Wenatchee	*45, 55, 67
West Virginia:	
Beckley	6−, 21, 66
Clarksburg	12+, 22, 69−
Wisconsin:	
Green Bay	2+, 6, 70+
La Crosse	8+, *32+, 38−, 72

Change the offset carrier requirements only as follows:

City	Channel No.	
	From—	To—
Red Wing, Minn	63	63−
Duncan, Okla	39	39−
Aiken, S. C	54−	54

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9. Attached hereto for convenience is a recapitulation of Section 3.606(b) containing all amendments thereto adopted prior to November 6, 1953. This recapitulation is effective as of December 14, 1953.

6. Amend Section 3.606(b) as follows:

Adopted October 28, 1953; published in the Federal Register November 4, 1953 (p. 6969); effective December 4, 1953.

1. Amend the table to read:

City:	*Channel No.*
Washington, D. C	4—, 5—, 7+, 9—, 20+, *26—, 50—

2. Change the Channel 50 assignment in Rocky Mount, N. C., from 50 to 50+.

3. Change the Channel 50 assignment in Marion, Va., from 50— to 50.

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7. Amend Section 3.606(b) by the substitution of the following assignments for the cities listed below:

Adopted November 5, 1953; published in the Federal Register November 14, 1953 (p. 7246); effective December 14, 1953.

City:	*Channel No.*
Selma, Ala	8—, 58+
Columbus, Miss	4—, 28—
West Point, Miss	56+

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8. Amend Section 3.606(b) by the substitution of the following assignments for the cities listed below:

Adopted November 5, 1953; published in the Federal Register November 14, 1953 (p. 7246); effective December 14, 1953.

City	*Channel No.*
Arkansas:	
Fort Smith	5—, *16, 22, 39
California:	
El Centro	16, 56
Merced	34—, 66
Modesto	14+, 58
Stockton	13+, 36, *42, 64
Florida:	
Clearwater	32+, 50
Daytona Beach	2—, 53
Orlando	6—, 9, 18, *24—, 47
Indiana:	
Terre Haute	10, *57+, 63—, 73+
Iowa:	
Ottumwa	15+, 63
Waterloo	7+, 16—, *22—, 46+
Kentucky:	
Lexington	18+, 27—, 64, 70+
Paducah	6+, 43, 72
Louisiana:	
Alexandria	5, 62+, 74
Bogalusa	69, 78
Lake Charles	7—, *19, 25, 60+
Maryland:	
Cumberland	17+, 30—
Hagerstown	52, 68+
Missouri:	
Cape Girardeau	12, 18+, 69
North Carolina:	
Asheville	13—, *56—, 62+, 78
Durham	11+, *40—, 46+, 73—
Fayetteville	18—, 54—
Goldsboro	34, 72
Oregon:	
Klamath Falls	2—, 17
Salem	3+, *18—, 24+, 66
Ohio:	
Gallipolis	72
South Carolina:	
Charleston	2+, 5+, *13, 17+
Florence	8—, 60
Spartanburg	7+, 17—, 74—
Texas:	
Big Spring	4—, 34+
Tyler	7, 19—, 72
Washington:	
Wenatchee	*45, 55, 67
West Virginia:	
Beckley	6—, 21, 66
Clarksburg	12+, 22, 69—
Wisconsin:	
Green Bay	2+, 6, 70+
La Crosse	8+, *32+, 38—, 72

Change the offset carrier requirements only as follows:

City	Channel No.	
	From—	To—
Red Wing, Minn	63	63—
Duncan, Okla	39	39—
Aiken, S. C	54—	54

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9. Attached hereto for convenience is a recapitulation of Section 3.606(b) containing all amendments thereto adopted prior to November 6, 1953. This recapitulation is effective as of December 14, 1953.

(b) *Table of assignments.*

	Channel No.
Alabama:	
Andalusia	29
Anniston	70+
Auburn	*56
Bessemer	54
Birmingham	6−, *10−, 13−, 42+, 48
Brewton	23+
Clanton	14
Cullman	60+
Decatur	23−
Demopolis	18
Dothan	9+, 19−
Enterprise	40+
Eufaula	44
Florence	41
Fort Payne	19
Gadsden	15+, 21+
Greenville	49−
Guntersville	40−
Huntsville	31+
Jasper	17
Mobile	5+, 10+, *42, 48+
Montgomery	12, 20, *26+, 32
Opelika	22−
Selma	8−, 58+
Sheffield	47−
Sylacauga	24−
Talladega	64
Thomasville	27−
Troy	38−
Tuscaloosa	45, 51−
Tuskegee	16−
University	*7
Arizona:	
Ajo	14−
Bisbee	15
Casa Grande	18−
Clifton	25−
Coolidge	30+
Douglas	3−
Eloy	24
Flagstaff	9, 13
Globe	34+
Holbrook	14
Kingman	6−
Mesa	12−
Miami	28+
Morenci	31
Nogales	17−
Phoenix	3+, 5−, *8+, 10−
Prescott	15
Safford	21
Tucson	4−, *6+, 9−, 13−
Williams	25
Winslow	16−
Yuma	11−, 13+
Arkansas:	
Arkadelphia	34+
Batesville	30−
Benton	40
Blytheville	64+, 74
Camden	50
Conway	62
El Dorado	10−, 26−
Fayetteville	*13−, 41−
Forrest City	22+
Fort Smith	5−, *16, 22, 39
Harrison	24
Helena	54−
Hope	15−
Hot Springs	9+, 52+
Jonesboro	8, 39+
Little Rock	*2−, 4, 11+, 17−, 23+
Magnolia	28+
Malvern	46
Morrilton	43−
Newport	28
Paragould	58−
Pine Bluff	7−, 36
Russellville	19
Searcy	33
Springdale	35−
Stuttgart	14+
California:	
Alturas	9
Bakersfield	10−, 29
Brawley	25+
Chico	12−
Corona	52
Delano	37+
El Centro	16, 56
California—Continued	
Eureka	3−, 13−
Fresno	12+, *18−, 24, 47, 53
Hanford	21
Los Angeles	2, 4, 5, 7, 9, 11, 13, 22, *28, 34
Madera	30+
Merced	34−, 66
Modesto	14+, 58
Monterey. (*See* Salinas.)	
Napa	62
Oakland. (*See* San Francisco.)	
Oxnard	32
Palm Springs	14
Petaluma	56
Port Chicago	15
Porterville	55
Red Bluff	16
Redding	7
Riverside	40, 46
Sacramento	3, *6, 10, 40−, 46+
Salinas-Monterey	8+, 28−
San Bernardino	18, *24−, 30
San Buenaventura	38−
San Diego	8, 10, *15+, 21−, 27, 33, 39
San Francisco-Oakland	2+, 4−, 5+ 7−, *9+, 20−, 26−, 32+, 38, 44−
San Jose	11+, 48, *54, 60
San Luis Obispo	6+
Santa Barbara	3−, 20, 26
Santa Cruz	16
Santa Maria	44
Santa Paula	16+
Santa Rosa	50
Stockton	13+, 36, *42, 64
Tulare	27+
Ukiah	18
Visalia	43, 49
Watsonville	22−
Yreka City	11
Yuba City	52−
Colorado:	
Alamosa	19+
Boulder	*12, 22+
Canon City	36
Colorado Springs	11, 13, *17+, 23+
Craig	19
Delta	24−
Denver	2, 4−, *6−, 7, 9−, 20, 26+
Durango	6+, 15
Fort Collins	44+
Fort Morgan	15+
Grand Junction	5−, 21+
Greeley	50
La Junta	24
Lamar	18−
Leadville	14+
Longmont	32
Loveland	38
Montrose	10+, 18
Pueblo	3−, 5, *8, 28−, 34−
Salida	25
Sterling	25−
Trinidad	21−
Walsenburg	30−
Connecticut:	
Bridgeport	43−, 49−, *71
Hartford	3+, 18−, *24
Meriden	65−
New Britain	30+
New Haven	8+, 59+
New London	26+, 81
Norwalk. (*See* Stamford.)	
Norwich	57+, *63−
Stamford-Norwalk	27
Waterbury	53
Delaware:	
Dover	40
Wilmington	12, *59−, 83+
District of Columbia:	
Washington	4−, 5−, 7+, 9−, 20+, *26−, 50−
Florida:	
Belle Glade	25−
Bradenton	28−
Clearwater	32+, 50
Daytona Beach	2−, 53
De Land	44+
Fort Lauderdale	17−, 23−
Fort Myers	11+
Fort Pierce	19
Gainesville	*5−, 20+
Jacksonville	4+, *7, 12−, 30+, 36−
Key West	14+, 20
Florida—Continued	
Lake City	33+
Lakeland	16+, 22+
Lake Wales	14
Leesburg	26−
Marianna	17+
Melbourne	37−
Miami	*2, 4, 7−, 10+, 27+, 33
Ocala	15+
Orlando	6−, 9, 18, *24−, 47
Palatka	17
Panama City	7+, *30, 36+
Pensacola	3−, 15−, *21, 46
Quincy	54+
St. Augustine	25+
St. Petersburg. (*See* Tampa.)	
Sanford	35+
Sarasota	34+
Tallahassee	*11−, 24, 51
Tampa-St. Petersburg	*3, 8−, 13−, 38
West Palm Beach	5, 12, *15, 21+
Georgia:	
Albany	10, 25
Americus	31
Athens	*8, 60−
Atlanta	2, 5−, 11+, *30, 36
Augusta	6+, 12+
Bainbridge	35−
Brunswick	28+, 34−
Cairo	45+
Carrollton	33
Cartersville	63−
Cedartown	53−
Columbus	4, 28, *34
Cordele	43
Dalton	25+
Douglas	32−
Dublin	15
Elberton	24+
Fitzgerald	23
Fort Valley	18+
Gainesville	52
Griffin	39+
La Grange	50
Macon	*41+, 47+
Marietta	57+
Milledgeville	51+
Moultrie	48−
Newnan	61+
Rome	9, 59
Savannah	3+, *9−, 11
Statesboro	22
Swainsboro	20−
Thomasville	6, 27
Tifton	14−
Toccoa	35
Valdosta	37+
Vidalia	26
Warner Robins	13+
Waycross	16
Idaho:	
Blackfoot	33
Boise	*4+, 7, 9−
Burley	15−
Caldwell	2
Coeur d'Alene	12−
Emmett	26−
Gooding	23
Idaho Falls	3, 8+
Jerome	17
Kellogg	33−
Lewiston	3−
Moscow	*15
Nampa	6, 12+
Payette	14+
Pocatello	6−, 10
Preston	41
Rexburg	27+
Rupert	21
Sandpoint	9+
Twin Falls	11, 13−
Wallace	27−
Weiser	20−
Illinois:	
Alton	48
Aurora	16
Belleville	54+
Bloomington	15−
Cairo	24−
Carbondale	34, *61−
Centralia	32+, 59+
Champaign-Urbana	3+, *12−, 21, 27, 33

Illinois—Continued	*Channel No.*
Chicago	2−, 5, 7, 9+, *11, 20, 26, 32, 38, 44
Danville	24
Decatur	17, 23+
De Kalb	*67
Dixon	47+
Elgin	28+
Freeport	23
Galesburg	40−
Harrisburg	22
Jacksonville	29
Joliet	48+
Kankakee	14
Kewanee	60−
La Salle	35
Lincoln	53+
Macomb	61+
Marion	40
Mattoon	46−
Moline. (*See* Davenport, Iowa.)	
Mt. Vernon	38−
Olney	16−
Pekin	69+
Peoria	8, 19, *37−, 43+
Quincy	10−, 21+
Rockford	13+, 39+, *45+
Rock Island. (*See* Davenport, Iowa.)	
Springfield	2+, 20+, *66+
Streator	65−
Urbana. (*See* Champaign.)	
Vandalia	28−
Waukegan	22+
Indiana:	
Anderson	61
Angola	15+
Bedford	68
Bloomington	4, *30−, 36
Columbus	42−
Connersville	38+
Elkhart	52
Evansville	7, 50−, *56, 62
Fort Wayne	*27+, 33−, 69
Gary	50, *66
Hammond	56−
Hatfield°	9+
Indianapolis	6, 8−, 13−, *20−, 26+, 67−
Jasper	19+
Kokomo	31
Lafayette	47, 59
Lebanon	18
Logansport	51
Madison	25−
Marion	29+
Michigan City	62+
Muncie	49, 55+, *71
Princeton	52+
Richmond	32−
Shelbyville	58+
South Bend	34−, *40+, 46
Tell City	31−
Terre Haute	10, *57+, 63−, 73+
Vincennes	44+
Washington	60+
Iowa:	
Algona	37+
Ames	5, 25−
Atlantic	45−
Boone	19−
Burlington	32−, 38+
Carroll	39
Cedar Rapids	2, 9−, 20−, *26+
Centerville	31−
Charles City	18−
Cherokee	14
Clinton	64
Creston	43
Davenport-Rock Island-Moline, Ill.	4+, 6+, *30+, 36+, 42−
Decorah	44+
Des Moines	8−, *11+, 13−, 17+, 23−
Dubuque	56+, 62−
Estherville	24+
Fairfield	54

Iowa—Continued	*Channel No.*
Fort Dodge	21
Fort Madison	50+
Grinnell	71
Iowa City	*12+, 24−
Keokuk	44−
Knoxville	33−
Marshalltown	49
Mason City	3+, 35−
Muscatine	58
Newton	65+
Oelwein	28
Oskaloosa	52+
Ottumwa	15+, 63
Red Oak	32+
Shenandoah	20+
Sioux City	4−, 9, *30, 36−
Spencer	42+
Storm Lake	34+
Waterloo	7+, 16−, *22−, 46+
Webster City	27
Kansas:	
Abilene	31+
Arkansas City	49
Atchison	60+
Chanute	50−
Coffeyville	33−
Colby	22−
Concordia	47−
Dodge City	6+, 23
El Dorado	55+
Emporia	39−
Fort Scott	27
Garden City	9, 11+
Goodland	31
Great Bend	2, 28
Hays	7−, 20−
Hutchinson	12, 18
Independence	20
Iola	44+
Junction City	29+
Larned	15−
Lawrence	*11, 17−
Leavenworth	54−
Liberal	14
McPherson	26−
Manhattan	*8, 23+
Newton	14+
Olathe	52−
Ottawa	21−
Parsons	46−
Pittsburg	7+, 38−
Pratt	36+
Salina	34
Topeka	13+, 42, *48+
Wellington	24−
Wichita	3−, 10−, 16−, *22+
Winfield	43+
Kentucky:	
Ashland	59−
Bowling Green	13, 17+
Campbellsville	40+
Corbin	16
Danville	35+
Elizabethtown	23
Frankfort	43−
Glasgow	28+
Harlan	73+
Hazard	19−
Hopkinsville	20
Lexington	18+, 27−, 64, 70+
Louisville	3−, 11+, *15, 21−, 41−, 51−
Madisonville	26
Mayfield	63
Maysville	24+
Middlesborough	57, 63+
Murray	33−
Owensboro	14−
Paducah	6+, 43, 72
Pikeville	14−
Princeton	45−
Richmond	60
Somerset	29−
Winchester	37+
Louisiana:	
Abbeville	27+
Alexandria	5, 62+, 74
Bastrop	53+
Baton Rouge	2, 28, *34, 40−
Bogalusa	69, 78
Crowley	21+

Louisiana—Continued	*Channel No.*
De Ridder	14
Eunice	64−
Franklin	46+
Hammond	57
Houma	30+
Jackson	18−
Jennings	48
Lafayette	10, 38−, 67−
Lake Charles	7−, *19, 25, 60+
Minden	30
Monroe	8+, 43+
Morgan City	36+
Natchitoches	17+
New Iberia	15+
New Orleans	4+, 6+, *8, 20−, 26, 32+, 61
Oakdale	54+
Opelousas	58
Ruston	20
Shreveport	3−, 12
Thibodaux	24
Winnfield	22−
Maine:	
Auburn	23+
Augusta	10−, 29+
Bangor	2−, 5+, *16−
Bar Harbor	22−
Bath	65
Belfast	41−
Biddeford	59
Calais	7, 20−
Dover-Foxcroft	18+
Fort Kent	17+
Houlton	24
Lewiston	8−, 17
Millinocket	14+
Orono	*12−
Portland	6+, 13+, *47−, 53+
Presque Isle	8, 19
Rockland	25−
Rumford	55−
Van Buren	15−
Waterville	35+
Maryland:	
Annapolis	14−
Baltimore	2+, 11−, 13+, 18, *24+, 60−
Cambridge	22+
Cumberland	17+, 30−
Frederick	62+
Hagerstown	52, 68+
Salisbury	16+
Massachusetts:	
Amherst	*82
Barnstable	52
Boston	*2+, 4−, 5−, 7+, 44+, 50−, 56
Brockton	62
Fall River	46−, 68
Greenfield	58−
Holyoke. (*See* Springfield.)	
Lawrence	72
Lowell	32+
New Bedford	28−, 34+
North Adams	74+, *80
Northampton	36+
Pittsfield	64+
Springfield-Holyoke	55, 61
Worcester	14, 20
Michigan:	
Alma	41+
Alpena	9+, 30−
Ann Arbor	20+, *26−
Bad Axe	46−
Battle Creek	58−, 64−
Bay City	5−, 63−, *73+
Benton Harbor	42
Big Rapids	39
Cadillac	13−, 45
Calumet	13+
Cheboygan	4+, 36+
Coldwater	24−
Detroit	2+, 4, 7−, 50−, *56, 62
East Lansing	60+
East Tawas	25−
Escanaba	3+
Flint	12−, 16−, *22−, 28
Gladstone	40−
Grand Rapids	8+, *17+, 23−
Hancock	10−
Houghton	19
Iron Mountain	9, 27

* This assignment is made subject to such action as the Commission may take in the light of the final decision of the courts on the Petition for Review filed by the Logansport Broadcasting Company (C. A. D. C. Case No. 11601).

Michigan—Continued	Channel No.
Iron River	12−
Ironwood	31−
Jackson	48
Kalamazoo	3−, 36−
Lansing	6−, 54
Ludington	18+
Manistee	15−
Manistique	14+
Marquette	5+, 17
Midland	19+
Mount Pleasant	47−
Muskegon	29−, 35+
Petoskey	31
Pontiac	44+
Port Huron	34+
Rogers City	24
Saginaw	51−, 57
Sault Ste. Marie	8, 10+, 28−, *34
Traverse City	7+, 20−, *26+
West Branch	21
Minnesota:	
Albert Lea	57−
Alexandria	36
Austin	6−, 51+
Bemidji	24−
Brainerd	12
Cloquet	44
Crookston	21−
Detroit Lakes	18+
Duluth-Superior, Wis.	3, 6+, *8−, 32, 38
Ely	16
Fairmont	40+
Faribault	20
Fergus Falls	16−
Grand Rapids	20−
Hastings	29+
Hibbing	10+
International Falls	11
Little Falls	14+
Mankato	15−
Marshall	22+
Minneapolis-St. Paul	*2−, 4, 5−, 9+, 11−, 17, 23+
Montevideo	19
New Ulm	43−
Northfield	26
Owatonna	45
Red Wing	63−
Rochester	10, 55−
St. Cloud	7, 33
St. Paul. (*See* Minneapolis.)	
Stillwater	39−
Thief River Falls	15
Virginia	26+
Wadena	27+
Willmar	31+
Winona	61
Worthington	32
Mississippi:	
Biloxi	13, *44+, 50−
Brookhaven	37+
Canton	16
Clarksdale	6, 32
Columbia	35+
Columbus	4−, 28−
Corinth	29−
Greenville	21−, 27
Greenwood	24+
Grenada	15
Gulfport	56−
Hattiesburg	9−, 17−
Jackson	3+, 12+, *19+, 25−, 47
Kosciusko	52−
Laurel	33−
Louisville	46−
McComb	31−
Meridian	11, 30−, *36−
Natchez	29+
Pascagoula	22
Picayune	14−
Starkville	34−
State College	*2+
Tupelo	38
University	*20+
Vicksburg	41+
West Point	56+
Yazoo City	49
Missouri:	
Cape Girardeau	12, 18+, 69
Carthage	56−

Missouri—Continued	Channel No.
Caruthersville	27−
Chillicothe	14−
Clinton	49−
Columbia	8+, 16+, 22−
Farmington	52
Festus	14+
Fulton	24+
Hannibal	7−, 27+
Jefferson City	13, 33+
Joplin	12+, 30+
Kansas City	4, 5+, 9+, *19+, 25+, 65
Kennett	21
Kirksville	3−, 18
Lebanon	23
Marshall	40+
Maryville	26
Mexico	45
Moberly	35+
Monett	14
Nevada	18−
Poplar Bluff	15+
Rolla	46
St. Joseph	2−, 30−, *36
St. Louis	4−, 5−, *9, 11−, 30, 36−, 42+
Sedalia	6−, 28+
Sikeston	37
Springfield	3+, 10, *26+, 32
West Plains	20−
Montana:	
Anaconda	2+
Billings	2, 8, *11
Bozeman	*9, 22−
Butte	4, 6+, *7−, 15+
Cut Bank	20+
Deer Lodge	25+
Dillon	20
Glasgow	16
Glendive	18−
Great Falls	3+, 5+, *23−
Hamilton	17+
Hardin	4+
Havre	9+, 11+
Helena	10+, 12
Kalispell	8−
Laurel	14+
Lewistown	13
Livingston	16−
Miles City	3−, *6, 10
Missoula	*11−, 13−, 21+
Polson	18
Red Lodge	18+
Shelby	14−
Sidney	14
Whitefish	16+
Wolf Point	20−
Nebraska:	
Alliance	13−, 21
Beatrice	40
Broken Bow	14−
Columbus	49+
Fairbury	35
Falls City	38
Fremont	52
Grand Island	11−, 21+
Hastings	5−, 27−
Kearney	13, 19
Lexington	23−
Lincoln	10+, 12−, *18+, 24
McCook	8−, 17
Nebraska City	50
Norfolk	33+
North Platte	2−, 4+
Omaha	3, 6+, 7, *16, 22, 28−
Scottsbluff	10−, 16+
York	15
Nevada:	
Boulder City	4+
Carlin	14
Carson City	37
Elko	10−
Ely	3−, 6+
Fallon	29−
Goldfield	5−
Hawthorne	31
Henderson	2−
Las Vegas	8−, *10+, 13−
Lovelock	18+
McGill	8+
Reno	4, 8, *21+, 27−

Nevada—Continued	Channel No.
Tonopah	9−
Winnemucca	7+
Yerington	33
New Hampshire:	
Berlin	26
Claremont	37
Concord	27+
Durham	*11
Hanover	*21+
Keene	45−
Laconia	43
Littleton	24−
Manchester	9−, 48+
Nashua	54
Portsmouth	19+
Rochester	51
New Jersey:	
Andover	*69
Asbury Park	58
Atlantic City	46, 52+
Bridgeton	64−
Camden	*80
Freehold	*74
Hammonton	*70
Montclair	*77
Newark	13−
New Brunswick	*19−, 47+
Paterson	37+
Trenton	41+
Wildwood	48−
New Mexico:	
Alamogordo	17
Albuquerque	4+, *5+, 7+, 13+
Artesia	21+
Atrisco-Five Points	18+
Belen	24+
Carlsbad	6−, 23
Clayton	27−
Clovis	12+, 35
Deming	14+
Farmington	17−
Gallup	3, *8−, 10
Hobbs	46
Hot Springs	19
Las Cruces	22−
Las Vegas	14−
Lordsburg	23+
Los Alamos	20−
Lovington	27
Portales	22+
Raton	46−, *52
Roswell	*3+, 8, 10−
Santa Fe	2+, *9+, 11−
Silver City	*10+, 12
Socorro	15+
Tucumcari	25+
New York:	
Albany-Schenectady-Troy	6, *17+, 23−, 41
Amsterdam	52−
Auburn	37−
Batavia	33−
Binghamton	12−, 40−, *46+
Buffalo (*also see* Buffalo-Niagara Falls)	17, *23
Buffalo-Niagara Falls	2, 4−, 7+, 59
Cortland	56+
Dunkirk	46
Elmira	18+, 24−
Glens Falls	39+
Gloversville	29−
Hornell	50
Ithaca	*14+, 20−
Jamestown	58+
Kingston	66−
Lake Placid	5
Malone	20+, *66
Massena	14−
Middletown	60
New York	2−, 4, 5+, 7, 9+, 11+, *25, 31−
Niagara Falls. (*See* Buffalo-Niagara Falls.)	
Ogdensburg	24+
Olean	54+
Oneonta	62−
Oswego	31
Patchogue	75
Plattsburg	28+

	Channel No.
New York—Continued	
Poughkeepsie	21−, *83
Rochester	5−, 10+, 15−, *21, 27+
Rome. (*See* Utica.)	
Saranac Lake	18
Schenectady (*also see* Albany)	35
Syracuse	3−, 8, *43+
Troy. (*See* Albany.)	
Utica-Rome	13, 19, *25+
Watertown	48
North Carolina:	
Ahoskie	53
Albemarle	20
Asheville	13−, *56−, 62+, 78
Burlington	63
Burnsville	18
Chapel Hill	*4+
Charlotte	3, 9+, 36+, *42+
Durham	11+, *40−, 46+, 73−
Elizabeth City	31+
Fayetteville	18−, 54−
Gastonia	48
Goldsboro	34, 72
Greensboro	2−, *51−, 57−
Greenville	9
Henderson	52−
Hendersonville	27
Hickory	30−
High Point	15+
Jacksonville	16
Kannapolis	59+
Kinston	45
Laurinburg	41−
Lumberton	21+
Mount Airy	55
New Bern	13−
Raleigh	5, *22−, 28−
Roanoke Rapids	30+
Rocky Mount	50+
Salisbury	80
Sanford	38
Shelby	39
Southern Pines	49
Statesville	64−
Washington	7
Wilmington	3−, 6, 29−, *35+
Wilson	56
Winston-Salem	12, 26+, *32−
North Dakota:	
Bismarck	5, 12−, 18, *24
Bottineau	16+
Carrington	26−
Devils Lake	8+, 14−
Dickinson	2+, 4, *17
Fargo	6, 13−, *34−, 40
Grafton	17
Grand Forks	*2, 10
Harvey	22+
Jamestown	7−, 42
Lisbon	23
Minot	*6+, 10−, 13+
New Rockford	20+
Rugby	38−
Valley City	4−, 32−
Wahpeton	45+
Williston	8−, 11−, *34+
Ohio:	
Akron	49+, *55−, 61+
Ashtabula	15
Athens	62−
Bellefontaine	63
Bowling Green	*70
Cambridge	23
Canton	29
Chillicothe	56+
Cincinnati	5−, 9, 12, *48−, 54−, 74−
Cleveland	3, 5+, 8, 19, *25+, 65+
Columbus	4−, 6+, 10+, *34, 40−
Coshocton	20
Dayton	2, 7+, *16+, 22+
Defiance	43
Findlay	53
Fremont	59+
Gallipolis	72
Hamilton-Middletown	65
Lancaster	28−
Lima	35−, 73
Lorain	31−
Mansfield	36+
Marion	17−
Ohio—Continued	
Massillon	23+
Middletown. (*See* Hamilton.)	
Mount Vernon	58
Newark	60−
Oxford	*14+
Piqua	44−
Portsmouth	30
Sandusky	42+
Springfield	52−, 76
Steubenville. (*See* Wheeling, W. Va.)	
Tiffin	47+
Toledo	11−, 13, *30+
Warren	67+
Youngstown	21−, 27, 73−
Zanesville	50+
Oklahoma:	
Ada	10+, 50+
Altus	36
Alva	30
Anadarko	58−
Ardmore	12−, 55−
Bartlesville	62−
Blackwell	51−
Chickasha	64
Claremore	15
Clinton	32−
Duncan	39−
Durant	27−
Elk City	15+, 26+
El Reno	56+
Enid	5, 21, *27+
Frederick	44
Guthrie	48
Guymon	20+
Hobart	23+
Holdenville	14−
Hugo	21+
Lawton	7+, *28+, 34−
McAlester	47
Miami	58+
Muskogee	8−, *45+, 66+
Norman	31−, *37−
Oklahoma City	4−, 9−, *13, 19+, 25−
Okmulgee	26
Pauls Valley	61
Ponca City	40−
Pryor Creek	54
Sapulpa	42−
Seminole	59
Shawnee	53−
Stillwater	29−, *69
Tulsa	2+, 6, *11−, 17+, 23
Vinita	28−
Woodward	8+
Oregon:	
Albany	55+
Ashland	14−
Astoria	30−
Baker	37+
Bend	15−
Burns	16
Corvallis	*7−, 49−
Eugene	*9+, 13, 20+, 26
Grants Pass	30
Klamath Falls	2−, 17
La Grande	13+
Lebanon	43+
McMinnville	46−
Medford	5
North Bend	16+
Pendleton	28
Portland	6+, 8−, *10, 12, 21−, 27+
Roseburg	4+, 28+
Salem	3+, *18−, 24+, 66
Springfield	37−
The Dalles	32
Pennsylvania:	
Allentown	39, 67
Altoona	10−, 19+, 25−
Bethlehem	51−
Bradford	70−
Butler	43−
Chambersburg	46−
Du Bois	31+
Easton	57−
Emporium	42−
Erie	12, 35+, *41−, 66+
Harrisburg	27−, 55+, 71+
Pennsylvania—Continued	
Hazleton	63
Irwin	4+
Johnstown	6, 56−
Lancaster	8−, 21+
Lebanon	15+
Lewistown	38
Lock Haven	32−
Meadville	37
New Castle	45−
Oil City	64
Philadelphia	3, 6−, 10, 17−, 23+, 29, *35−
Pittsburgh	2−, 11, *13−, 16, 47−, 53+
Reading	33+, 61−
Scranton	16−, 22−, 73
Sharon	39+
State College	*44
Sunbury	65
Uniontown	14
Washington	63+
Wilkes-Barre	28, 34
Williamsport	36−
York	43, 49
Rhode Island:	
Providence	10+, 12+, 16, *22
South Carolina:	
Aiken	54
Anderson	40, 58−
Camden	14
Charleston	2+, 5+, *13, 17+
Clemson	*68
Columbia	10−, *19+, 25−, 67+
Conway	23−
Florence	8−, 60
Georgetown	27−
Greenville	4−, 23+, *29
Greenwood	21−
Lake City	55+
Lancaster	31−
Laurens	45−
Marion	43−
Newberry	70
Orangeburg	44−
Rock Hill	61−
Spartanburg	7+, 17−, 74−
Sumter	47
Union	65−
South Dakota:	
Aberdeen	9−, 17+
Belle Fourche	23+
Brookings	*8, 25
Hot Springs	17+
Huron	12+, 15+
Lead	5−, 26
Madison	46
Mitchell	5+, 20−
Mobridge	27−
Pierre	6−, 10+, *22+
Rapid City	7+, 15−
Sioux Falls	11, 13+, 38+, *44−
Sturgis	20
Vermillion	*2+, 41
Watertown	3−, 35+
Winner	18−
Yankton	17−
Tennessee:	
Athens	14+
Bristol, Tenn.-Bristol, Va.	5+, 46−
Chattanooga	3+, 12−, 43+, 49+, *55−
Clarksville	53
Cleveland	38+
Columbia	39−
Cookeville	24
Covington	19−
Dyersburg	46+
Elizabethton	22+
Fayetteville	27+
Gallatin	48+
Harriman	67
Humboldt	25
Jackson	9−, 16+
Johnson City	11−, 34+
Kingsport	28
Knoxville	6, 10+, *20+, 26−
Lawrenceburg	50+
Lebanon	58
McMinnville	46
Maryville	51
Memphis	3, 5+, *10+, 13+, 42−, 48−
Morristown	54+
Murfreesboro	18−

Tennessee—Continued	*Channel No.*
Nashville	*2−, 4+, 8+, 30+, 36+
Oak Ridge	32+
Old Hickory	5
Paris	51+
Pulaski	44−
Shelbyville	62−
Springfield	42
Tullahoma	68−
Union City	55
Texas:	
Abilene	9+, 33−
Alice	34+
Alpine	12−
Amarillo	*2−, 4, 7, 10
Athens	25+
Austin	7+, 18−, 24, *70−
Ballinger	25
Bay City	33
Beaumont-Port Arthur	4−, 6−, 31+, *37
Beeville	38−
Big Spring	4−, 34+
Bonham	43
Borger	33
Brady	15−
Breckenridge	14+
Brenham	52−
Brownfield	15
Brownsville (*also see* Brownsville-Harlingen-Weslaco)	36
Brownsville-Harlingen-Weslaco[1]	4+, 5−
Brownwood	19
Bryan	54−
Childress	40
Cleburne	57
Coleman	21−
College Station	*3+, 48−
Conroe	20+
Corpus Christi	6+, 10−, *16+, 22, 43
Corsicana	47+
Crockett	56
Crystal City	28+
Cuero	25−
Dalhart	16
Dallas	4+, 8, *13+, 23, 29, 73
Del Rio	16−
Denison	52
Denton	*2, 17
Eagle Pass	26
Edinburg	26−
El Campo	27
El Paso	4, *7, 9, 13, 20+, 26+
Falfurrias	52
Floydada	45
Fort Stockton	22
Fort Worth	5+, 11−, 20−, *26−
Gainesville	49−
Galveston	11+, 35−, 41−, *47−
Gonzales	64+
Greenville	69−
Harlingen (*also see* Brownsville-Harlingen-Weslaco)	23
Hebbronville	58
Henderson	42+
Hereford	19−
Hillsboro	63
Houston	2−, *8−, 13−, 23+, 29−, 39−
Huntsville	15
Jacksonville	36−
Jasper	49+
Kermit	14
Kilgore	59−
Kingsville	40
Lamesa	28
Lampasas	40−
Laredo	8, 13, *15+
Levelland	38−
Littlefield	32
Longview	32, 38+
Lubbock	5−, 11, 13−, *20, 26
Lufkin	9, 46−
McAllen	20−
McKinney	65−
Marfa	19+
Marshall	16−
Texas—Continued	
Mercedes	32
Mexia	50−
Midland	2+, 18
Mineral Wells	38
Mission	14
Monahans	9−
Mount Pleasant	35
Nacogdoches	40+
New Braunfels	62−
Odessa	7−, 24−
Orange	43+
Pampa	17−
Paris	33+
Pearsall	31
Pecos	16+
Perryton	22
Plainview	29+
Port Arthur. (*See* Beaumont.)	
Quanah	42
Raymondville	42
Rosenberg	17−
San Angelo	3−, 8+, 17+, *23−
San Antonio	4, 5, *9−, 12+, 35+, 41+
San Benito	48
San Marcos	53+
Seguin	14−
Seymour	24+
Sherman	46+
Snyder	30+
Stephenville	32+
Sulphur Springs	41
Sweetwater	12
Taylor	58+
Temple	6, 16, 22+
Terrell	53
Texarkana	6+, *18, 24−
Tyler	7, 19−, 72
Uvalde	20
Vernon	18+
Victoria	19+
Waco	10+, *28−, 34
Waxahachie	45−
Weatherford	51
Weslaco. (*See* Brownsville-Harlingen-Weslaco.)	
Wichita Falls	3, 6−, *16+, 22−
Utah:	
Brigham	36−
Cedar City	5
Logan	12−, 30, *46
Ogden	9+, *18−, 24
Price	6
Provo	11+, 22, *28
Richfield	13+
St. George	18+
Salt Lake City	2−, 4− 5+, *7−, 20+, 26
Tooele	44
Vernal	3+
Vermont:	
Bennington	33
Brattleboro	77+
Burlington	*16+, 22+
Montpelier	3, 40
Newport	46
Rutland	49+
St. Albans	34−
St. Johnsbury	30
Virginia:	
Blacksburg	*60+
Bristol. (*See* Bristol, Tenn.)	
Charlottesville	*45+, 64+
Covington	44+
Danville	24−
Emporia	25+
Farmville	19
Fredericksburg	47
Front Royal	39−
Harrisonburg	3− 34−
Lexington	54
Lynchburg	13, 16−
Marion	50
Martinsville	35−
Newport News. (*See* Norfolk-Portsmouth-Newport News.)	
Norfolk-Portsmouth (*also see* Norfolk-Portsmouth-Newport News)	27
Norfolk-Portsmouth-Newport News (*also see* Norfolk-Portsmouth)	3+, 10+, 15, *21−, 33
Virginia—Continued	
Norton	52+
Petersburg	8, 41
Portsmouth. (*See* Norfolk-Portsmouth and *also see* Norfolk, Portsmouth-Newport News.)	
Pulaski	37−
Richmond	6+, 12−, *23, 29+
Roanoke	7−, 10, 27+, *33−
South Boston	14+
Staunton	36
Waynesboro	42
Williamsburg	17
Winchester	28+
Washington:	
Aberdeen	58
Anacortes	34
Bellingham	12+, 18+, 24−
Bremerton	44, 50
Centralia	17
Ellensburg	49, *65
Ephrata	43
Everett	22−, 28−
Grand Coulee	37
Hoquiam	52
Kelso	39
Kennewick (*also see* Kennewick-Richland-Pasco)	25
Kennewick-Richland-Pasco	*41
Longview	33
Olympia	60
Omak-Okanogan	*35−
Okanogan. (*See* Omak.)	
Pasco (*also see* Kennewick-Richland-Pasco)	19−
Port Angeles	16−
Pullman	*10−, 24
Richland (*also see* Kennewick-Richland-Pasco)	31
Seattle	4, 5+, 7, *9, 20, 26+
Spokane	2−, 4−, 6+, *7+
Tacoma	11+, 13−, *56, 62
Walla Walla	5−, 8, *22
Wenatchee	*45, 55, 67
Yakima	23+, 29+, *47
West Virginia:	
Beckley	6−, 21, 66
Bluefield	41+
Charleston	8+, *43+, 49−
Clarksburg	12+, 22, 69−
Elkins	40+
Fairmont	35
Fayetteville	4
Hinton	31
Huntington	3+, 13+, *53−
Logan	23−
Martinsburg	58−
Morgantown	*24
Parkersburg	15−
Welch	25
Weston	5, 32
Wheeling (*also see* Wheeling-Steubenville, Ohio)	*57+
Wheeling-Steubenville, Ohio	7, 9+, 51+
Williamson	17
Wisconsin:	
Adams	*58+
Appleton	42+
Ashland	15+
Beaver Dam	37
Beloit	57
Chilton	*24+
Eau Claire	13, *19+, 25+
Fond du Lac	54+
Green Bay	2+, 6, 70+
Janesville	63+
Kenosha	61−
La Crosse	8+, *32+, 38−, 72
Madison	3, *21−, 27−, 33+
Manitowoc	65
Marinette	11+, 32−, *38+
Milwaukee	4−, *10+, 12, 19−, 25, 31+
Oshkosh	48−
Park Falls	*18
Portage	17−
Prairie du Chien	34
Racine	49−, 55
Rhinelander	22
Rice Lake	21+
Richland Center	15, *66−

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[1] These assignments may be utilized in any community lying within the area of the triangle formed by Brownsville, Harlingen and Weslaco.

	Channel No.
Wisconsin—Continued	
Sheboygan	59−
Shell Lake	*30−
Sparta	50−
Stevens Point	20+, 26−
Sturgeon Bay	44−
Superior. (*See* Duluth, Minn.)	
Wausau	7−, 16+, *46−
Wisconsin Rapids	14−
Wyoming:	
Buffalo	29
Casper	2+, 6+
Cheyenne	3, 5+
Cody	24−
Douglas	14
Evanston	14−
Gillette	31−
Green River	16
Greybull	40
Lander	17−
Laramie	*8+, 18+
Lovell	36+
Lusk	19−
Newcastle	28+
Powell	30+
Rawlins	11−
Riverton	10+
Rock Springs	13
Sheridan	9−, 12+
Thermopolis	15
Torrington	27
Wheatland	24+
Worland	34

U. S. TERRITORIES AND POSSESSIONS

Alaska:	
Anchorage	2−, *7−, 11−, 13−
Fairbanks	2+, 4+, 7+, *9+, 11+, 13+
Juneau	*3, 8, 10
Ketchikan	2, 4, *9
Seward	4−, 9−
Sitka	13
Hawaiian Islands:	
Hilo, Hawaii	2, *4, 7, 9, 11, 13
Honolulu, Oahu	2+ 4−, *7+, 9−, 11+, 13−
Lihue, Kauai	3+, *8−, 10+, 12−
Wailuku, Maui	3, 8, *10, 12
Puerto Rico:	
Arecibo	13+
Caguas	11−
Mayaguez	3+, 5−
Ponce	7+, 9−
San Juan	2+, 4−, *6+
Virgin Islands:	
Charlotte Amalie	10−, 12+
Christiansted	8+

(Eff. 12-14-53)

FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

AMENDMENT NO. 3-7

PART 3 - RULES GOVERNING RADIO BROADCAST SERVICES.
(The seventh amendment to edition revised to June 30, 1953.)

Incorporated herein for convenience are all amendments to the above-entitled edition of Part 3 adopted between March 13, 1954 and April 30, 1954, together with adoption, publication and effective dates for each amendment:

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1. The following amendment was adopted March 17, 1954; published in the Federal Register March 24, 1954 (p. 1583); to be effective April 23, 1954:

Section 3.606(b) "Table of Assignments" is amended as follows:

1. Add to the table:

City:	*Channel No.*
Munford, Ala	*7
Crossville, Tenn	*77
Lexington, Tenn	*11
Sneedville, Tenn	*2+

2. Amend the table to read:

City:	*Channel No.*
University, Ala	*74+
Tupelo, Miss	9—, 38
Cookeville, Tenn	24, *69
Jackson, Tenn	7+, 16+

3. Change the Channel 9 assignment in Hattiesburg, Mississippi, from 9— to 9.

4. Change the Channel 11 assignment in Meridian, Mississippi, from 11 to 11—.

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2. The following amendment was adopted April 1, 1954; published in the Federal Register April 7, 1954 (p. 1954); to be effective May 7, 1954:

Section 3.606(b) "Table of Assignments" is amended by the substitution of the following assignments for the city listed below:

City:	*Channel No.*
Rapid City, S. Dak	3+, 7+, 15—

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FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

AMENDMENTS NOS.
3-8 thru 3-12

PART 3 - RULES GOVERNING RADIO BROADCAST SERVICES.

(Amendments 3-8 thru 3-12 to edition revised to June 30, 1953.)

Incorporated herein for convenience are all amendments to the above-entitled edition of Part 3 adopted between April 8, 1954 and May 31, 1954, together with adoption, publication and effective dates of each amendment.

(NOTE: Henceforth, each action of the Commission amending Part 3 will be assigned a separate amendment number, but where it appears desirable from the standpoint of convenience, several amendments may be grouped together and issued at the same time, as in this instance.)

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AMENDMENT NO. 3-8

The Table of Assignments contained in Section 3.606 is amended by adding to the table under the State of Indiana:

City:	*Channel No.*
Huntington	21+

NOTE: The above amendment was adopted by the Commission May 5, 1954 (FCC 54-589; Docket No. 10953); published in the Federal Register May 12, 1954 (p. 2721); to be effective June 11, 1954.

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AMENDMENT NO. 3-9

The Table of Assignments contained in Section 3.606 is amended to assign Channel 53+ to Fitzgerald, Georgia, in lieu of Channel 23.

City:	*Channel No.*
Fitzgerald, Georgia	53+

NOTE: The above amendment was adopted by the Commission May 5, 1954 (FCC 54-590; Docket No. 10954); published in the Federal Register May 12, 1954 (p. 2721); to be effective immediately.

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FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

Errata to
AMENDMENTS NOS.
3-8 thru 3-12

PART 3 - RULES GOVERNING RADIO BROADCAST SERVICES.
(Amendments 3-8 thru 3-12 to edition revised to June 30, 1953.)

Page 2 should be corrected as follows:

1. Move the comma after *17 in Amendment No. 3-11, Instruction 2, so it will read:

2. Amend to read as follows:

City:
Albany-Schenectady-Troy - - 6, *17+, 23-, 35, 41.

2. Rearrange paragraphs in Amendment No. 3-12, Instruction 1: Paragraph numbered (b) should follow paragraph numbered § 3.192 Lotteries.

3. The following amendment was adopted January 27, 1954; published in the Federal Register February 3, 1954 (p. 619); effective March 5, 1954:

Amend Section 3.606(b) by the substitution of the following assignments for the city listed below:

City:	*Channel No.*
Zanesville, Ohio	18−, 50+

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4. The following amendment was adopted January 29, 1954; published in the Federal Register February 4, 1954 (p. 652); effective immediately:

Section 3.606(b) is amended to show the TV channel assignments for Lafayette, Indiana to be *47, 59.

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5. The following amendment was adopted February 3, 1954; published in the Federal Register February 12, 1954 (p. 821); effective immediately:

Amend Section 3.606(b) by the substitution of the following assignments for the city listed below:

City:	*Channel No.*
Baltimore, Md	2+, 11−, 13+, 18, *24+, 72−

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6. The following amendments were adopted February 3, 1954; published in the Federal Register February 18, 1954 (p. 938); effective March 22, 1954:

(1) Section 3.610 (a) (1) (i) is amended to read as follows:

(i) Zone I consists of that portion of the United States located within the confines of the following lines drawn on the United States Albers Equal Area Projection Map (based on standard parallels 29½° and 45½°; North American datum): Beginning at the most easterly point on the State boundary line between North Carolina and Virginia; thence in a straight line to a point on the Virginia, West Virginia boundary line located at North Latitude 37° 49′ and West Longitude 80° 12′ 30″; thence westerly along the southern boundary lines of the States of West Virginia, Ohio, Indiana and Illinois to a point at the junction of the Illinois, Kentucky, and Missouri State boundary lines; thence northerly along the western boundary line of the State of Illinois, Iowa, and Wisconsin State boundary lines; thence easterly along the northern State boundary line of Illinois to the 90th meridian; thence north along this meridian to the 43.5° parallel; thence east along this parallel to the 71st meridian; thence in a straight line to the intersection of the 69th meridian and the 45th parallel; thence east along the 45th parallel to the Atlantic Ocean. When any of the above lines pass through a city, the city shall be considered to be located in Zone I. (See Appendix I, Figure 1.)

(2) Section 3.606, Table of Television Assignments, is amended as follows:

(a) Delete Channel 4 in Fayetteville, West Virginia.

(b) Amend the table to read:

City:	*Channel No.*
Beckley, West Va.	4, 21, 66
Bluefield, West Va.	6−, 41+.

(3) Delete Figure I, Appendix 1, of Subpart E and substitute the attached Figure 1.

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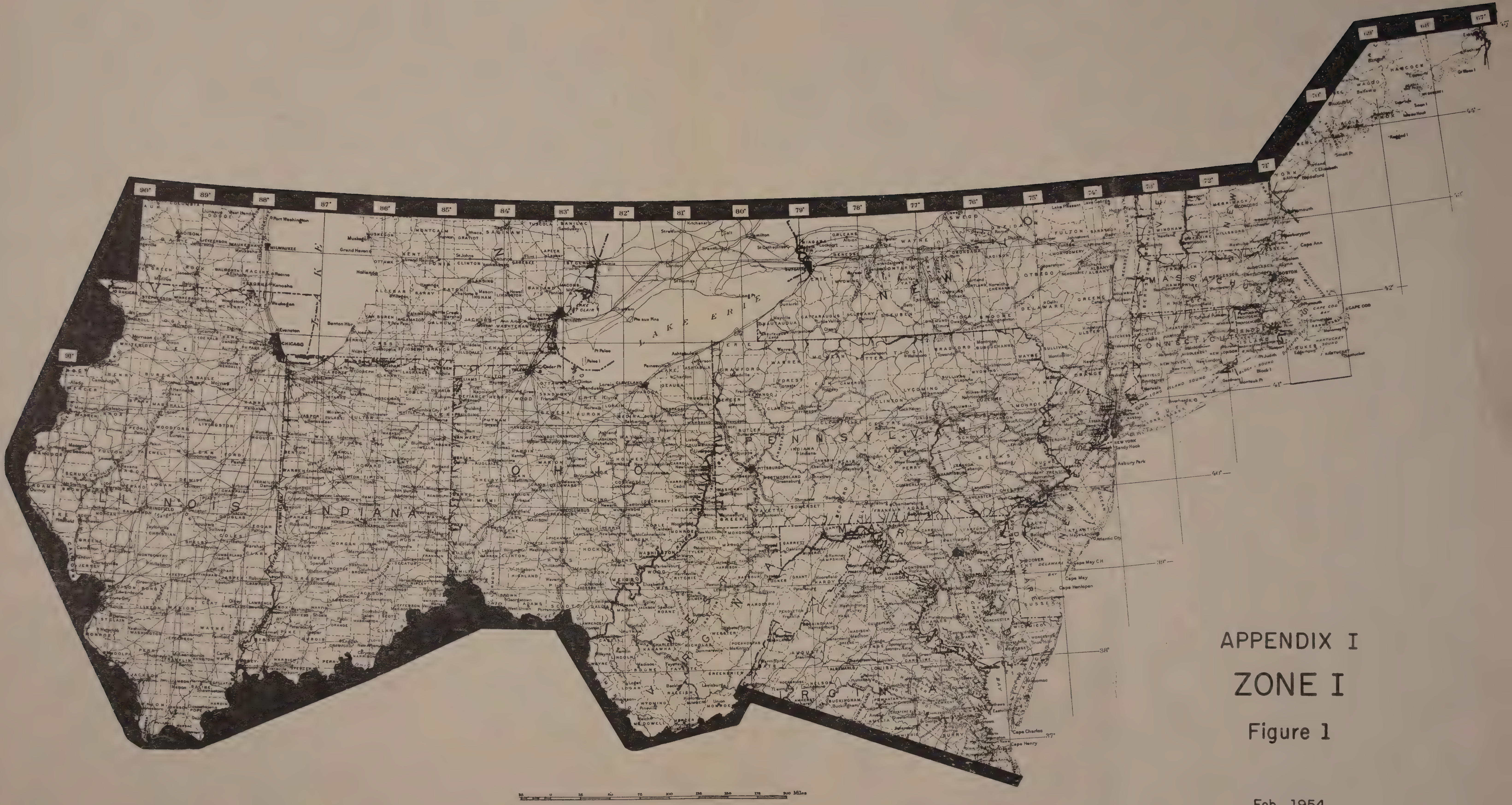
-FCC-


90°
89°
88°
87°
86°
85°
84°
83°
82°
81°
80°
79°
78°
77°
76°
75°
74°
73°
72°
71°
70°
69°
68°
67°
91°
45°
44°
42°
41°
40°
39°
38°
37°
LAKE ERIE
ILLINOIS
INDIANA
OHIO
PENNSYLVANIA
NEW YORK
MASSACHUSETTS
CONNECTICUT
VIRGINIA
MARYLAND
CHICAGO
MILWAUKEE
CLEVELAND
PITTSBURGH
BOSTON
NEW YORK
CAPE COD
Cape Charles
Cape Henry
Cape May
Cape Henlopen
Miles

APPENDIX I

ZONE I

Figure 1

Feb. 1954

3. Substitute the following text for the present text of Section 3.630:

Adopted November 5, 1953; published in the Federal Register November 14, 1953 (p. 7247); effective December 14, 1953.

§ 3.630 *Normal license period.* (a) All television broadcast station licenses will be issued for a normal license period of three years. Licenses will be issued to expire at the hour of 3:00 a. m., e. s. t., in accordance with the following schedule and at three-year intervals thereafter.[1]

(1) For stations located in Delaware and Pennsylvania, August 1, 1954.

(2) For stations located in Maryland, District of Columbia, Virginia, West Virginia, October 1, 1954.

(3) For stations located in North Carolina, South Carolina, December 1, 1954.

(4) For stations located in Florida, Puerto Rico, and Virgin Islands, February 1, 1955.

(5) For stations located in Alabama and Georgia, April 1, 1955.

(6) For stations located in Arkansas, Louisiana, and Mississippi, June 1, 1955.

(7) For stations located in Tennessee, Kentucky, and Indiana, August 1, 1955.

(8) For stations located in Ohio and Michigan, October 1, 1955.

(9) For stations located in Illinois and Wisconsin, December 1, 1955.

(10) For stations located in Iowa and Missouri, February 1, 1956.

(11) For stations located in Minnesota, North Dakota, South Dakota, Montana, and Colorado, April 1, 1956.

(12) For stations located in Kansas, Oklahoma, Nebraska, June 1, 1956.

(13) For stations located in Texas, August 1, 1956.

(14) For stations located in Wyoming, Nevada, Arizona, Utah, New Mexico, and Idaho, October 1, 1956.

(15) For stations located in California, December 1, 1953.

(16) For stations located in Washington, Oregon, Alaska, and Hawaii, February 1, 1954.

(17) For stations located in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, April 1, 1954.

(18) For stations located in New Jersey and New York, June 1, 1954.

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[1] Renewals of licenses will be granted for the period specified in the rule: *Provided, however,* That if as a result of the transition from the previous schedule to the above schedule the period for which a license is renewed is 6 months or less, the licensee may within the period 60 days to 30 days before the expiration date of such renewed license file, in lieu of renewal application (FCC Form 303), a written application under oath for the next renewal of license which shall consist of (1) a request that its license be renewed; (2) a statement that no substantial changes have been made in its operations or in its plans for future operations since its last renewal application; or if changes have been made or proposed, a statement specifying such changes; and (3) a statement that the applicant waives any claim to the use of any particular frequency or of the ether as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise. Upon review of such statements, the Commission may grant a renewal of license for the full period provided for in the rule; or if the Commission requires additional information, it may require the filing of renewal application (FCC Form 303).

4. Amend Section 3.606(b) as follows:

Adopted October 22, 1953; published in the Federal Register October 30, 1953 (p. 6850); effective November 30, 1953.

1. Amend the table to read:

City:	*Channel No.*
Wilmington, N. C.	3−, 6, 29−, *35+

2. Add to the table:

City:	*Channel No.*
Fayetteville, W. Va.	4

3. Change the Channel 4 assignment in Chapel Hill, N. C. from *4 to *4+.

4. Change the Channel 3 assignment in Savannah, Georgia, from 3− to 3+.

5. Amend Section 3.606(b) by the substitution of the following assignment for the city listed below:

Adopted October 28, 1953; published in the Federal Register November 4, 1953 (p. 6968); effective December 4, 1953.

City:	*Channel No.*
Corpus Christi, Tex.	6+, 10−, *16+, 22, 43

1. (Cont'd)

(c) Amend Section 3.636 to read as follows:

§ 3.636 *Multiple ownership.* (a) No license for a television broadcast station shall be granted to any party (including all parties under common control[9]) if:

(1) Such party directly or indirectly owns, operates, or controls another television broadcast station which serves substantially the same area; or

(2) Such party, or any stockholder, officer or director of such party, directly or indirectly owns, operates, controls, or has any interest in, or is an officer or director of any other television broadcast station if the grant of such license would result in a concentration of control of television broadcasting in a manner inconsistent with public interest, convenience, or necessity. In determining whether there is such a concentration of control, consideration will be given to the facts of each case with particular reference to such factors as the size, extent and location of areas served, the number of people served, and the extent of other competitive service to the areas in question. The Commission, however, will in any event consider that there would be such a concentration of control contrary to the public interest, convenience or necessity for any party or any of its stockholders, officers or directors to have a direct or indirect interest in, or be stockholders, officers, or directors of, more than five television broadcast stations.[9a]

(b) Paragraph (a) of this section is not applicable to non-commercial educational stations.

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[9] The word "control" as used herein is not limited to majority stock ownership, but includes actual working control in whatever manner exercised.

[9a] In applying the provisions of paragraph (a) of this section to the stockholders of a corporation which has more than 50 voting stockholders, only those stockholders need be considered who are officers or directors or who directly or indirectly own 1 percent or more of the outstanding voting stock.

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2. The following amendment was adopted November 25, 1953; published in the Federal Register December 3, 1953 (p. 7796); effective immediately:

§ 3.687 of the Commission's rules and regulations is amended as follows:

(a) Add footnote designator 28a at the end of paragraph (a) (2).

(b) Insert footnote 28a in its proper place to read as follows:

[28a] Television stations shall have until July 1, 1954 for compliance with the requirements of this subparagraph with respect to attenuation of the upper sidebands.

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3. The following amendment was adopted November 27, 1953; published in the Federal Register December 4, 1953 (p. 7821); effective January 4, 1954:

(a) Amend Section 3.606(b) by the substitution of the following assignments for the cities listed below:

City:	*Channel* No.
Iron River, Mich	33 –
Ironwood, Mich	12 –, 31 –
Bemidji, Minn	13 –, 24 –
Fargo, N. Dak	6, 11, *34 –, 40

(b) In Section 3.606(b), change the Channel 11 assignment at International Falls, Minnesota from Channel 11 to Channel 11+.

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FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

AMENDMENT No. 3-13

PART 3 - RULES GOVERNING RADIO BROADCAST SERVICES.

(The thirteenth amendment to edition revised to June 30, 1953.)

Directions for altering text:

1. Footnote 26a of Sec. 3.687(a)(3) is amended to read as follows:

> [26a] Television stations shall have until October 1, 1954, for compliance with the requirements of this subparagraph with respect to attenuation of the upper sidebands.

2. Footnote 34 of Sec. 3.687(i)(1) is amended to read as follows:

> [34] Stations authorized prior to July 1, 1953, shall have until October 1, 1954 to comply with this requirement unless actual interference is caused.

NOTE: The above amendment was adopted by the Commission June 16, 1954; published in the Federal Register June 23, 1954 (p. 3814); to be effective immediately.

(iii) The equivalent bandwidth assigned prior to modulation to the color difference signals E_Q' and E_I' are as follows:

Q-channel bandwidth:
  At 400 kc less than 2 db down.
  At 500 kc less than 6 db down.
  At 600 kc at least 6 db down.
I-channel bandwidth:
  At 1.3 mc less than 2 db down.
  At 3.6 mc at least 20 db down.

(iv) The gamma corrected voltages E_R', E_G', and E_B' are suitable for a color picture tube having primary colors with the following chromaticities in the CIE system of specification:

	x	y
Red (R)	0.67	0.33
Green (G)	0.21	0.71
Blue (B)	0.14	0.08

and having a transfer gradient (gamma exponent) of 2.2 [22] associated with each primary color. The voltages E_R', E_G', and E_B' may be respectively of the form $E_R^{1/\gamma}$, $E_G^{1/\gamma}$, and $E_B^{1/\gamma}$ although other forms may be used with advances in the state of the art.

(v) The radiated chrominance subcarrier shall vanish on the reference white of the scene.[22a]

(vi) E_Y', E_Q', E_I', and the components of these signals shall match each other in time to 0.05 μsecs.

(vii) The angles of the subcarrier measured with respect to the burst phase, when reproducing saturated primaries and their complements at 75 percent of full amplitude, shall be within ±10° and their amplitudes shall be within ±20 percent of the values specified above. The ratios of the measured amplitudes of the subcarrier to the luminance signal for the same saturated primaries and their complements shall fall between the limits of 0.8 and 1.2 of the values specified for their ratios. Closer tolerances may prove to be practicable and desirable with advance in the art.

3. Section 3.687 is amended as follows:

A. Delete paragraph (a) and substitute the following:

§ 3.687 *Transmitters and associated equipment*—(a) *Visual transmitter.* (1) For monochrome transmission only, the overall attenuation characteristics of the transmitter, measured in the antenna transmission line after the vestigial sideband filter (if used), shall not be greater than the following amounts below the ideal demodulated curve. (See Appendix III, Figure 7.)

2 db at 0.5 mc.
2 db at 1.25 mc.
3 db at 2.0 mc.
6 db at 3.0 mc.
12 db at 3.5 mc.

The curve shall be substantially smooth between these specified points, exclusive of the region from 0.75 to 1.25 mc.[27]

(2) For color transmission, the standard given by § 3.687 (a) (1) applies except as modified by the following: A sine wave of 3.58 mc introduced at those terminals of the transmitter which are normally fed the composite color picture signal shall produce a radiated signal having an amplitude (as measured with a diode on the R. F. transmission line supplying power to the antenna), which is down 6±2 db with respect to a signal produced by a sine wave of 200 kc. In addition, the amplitude of the signal shall not vary by more than ±2 db between the modulating frequencies of 2.1 and 4.18 mc.

(3) The field strength or voltage of the lower sideband, as radiated or dissipated and measured as described in subparagraph (4) of this paragraph, shall not be greater than −20 db for a modulating frequency of 1.25 mc or greater and in addition, for color, shall not be greater than −42 db for a modulating frequency of 3.579545 mc (the color subcarrier frequency). For both monochrome and color, the field strength or voltage of the upper sideband as radiated or dissipated and measured as described in subparagraph (4) of this paragraph shall not be greater than −20 db for a modulating frequency of 4.75 mc or greater.[28] [28a]

(4) The attenuation charactertistics of a visual transmitter shall be measured by application of a modulating signal to the transmitter input terminals in place of the normal composite television video signal. The signal applied shall be a composite signal composed of a synchronizing signal [29] to establish peak output voltage plus a variable frequency sine wave voltage occupying the interval between synchronizing pulses. The axis of the sine wave in the composite signal observed in the output monitor shall be maintained at an amplitude 0.5 of the voltage at synchronizing peaks. The amplitude of the sine wave input shall be held at a constant value. This constant value should be such that at no modulating frequency does the maximum excursion of the sine wave, observed in the composite output signal monitor, exceed the value 0.75 of peak output voltage. The amplitude of the 200 kilocycle sideband shall be measured and designated zero db as a basis for comparison. The modulation signal frequency shall then be varied over the desired range and the field strength or signal voltage of the corresponding sidebands measured. As an alternate method of measuring, in those cases in which the automatic d-c insertion can be replaced by manual control, the above characteristic may be taken by the use of a video sweep generator and without the use of pedestal synchronizing pulses. The d-c level shall be set for midcharacteristic operation.

(5) A sine wave, introduced at those terminals of the transmitter which are normally fed the composite color picture signal, shall produce a radiated signal having an envelope delay, relative to the average envelope delay between 0.05 and 0.20 mc, of zero microseconds up to a frequency of 3.0 mc; and then linearly decreasing to 4.18 mc so as to be equal to −0.17 μsecs at 3.58 mc. The tolerance on the envelope delay shall be ±0.05 μsecs at 3.58 mc. The tolerance shall increase linearly to ±0.1 μsec down to 2.1 mc, and remain at ±0.1 μsec down to 0.2 mc.[29a] The tolerance shall also increase linearly to ±0.1 μsec at 4.18 mc.

(6) The radio frequency signal, as radiated, shall have an envelope as would be produced by a modulating signal in conformity with Appendix II, Figure 4 (a) or (b), as modified by vestigial sideband operation specified by Appendix III, Figure 3.

(7) The time interval between the leading edges of successive horizontal pulses shall vary less than one half of one percent of the average interval. However, for color transmissions, § 3.682 (a) (5) and § 3.682 (a) (6) shall be controlling.

(8) The rate of change of the frequency of recurrence of the leading edges of the horizontal synchronizing signals shall be not greater than 0.15 percent per second, the frequency to be determined by an averaging process carried out over a period of not less than 20, nor more than 100 lines, such lines not to include any portion of the blanking interval. However, for color transmissions, § 3.682 (a) (5) and § 3.682 (a) (6) shall be controlling.

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[22] At the present state of the art it is considered inadvisable to set a tolerance on the value of gamma and correspondingly this portion of the specification will not be enforced.

[22a] The numerical values of the signal specification assume that this condition will be reproduced as CIE Illuminant C (x=0.310, y=0.316).

[27] Output measurement shall be made with the transmitter operating into a dummy load of pure resistance and the demodulated voltage measured across this load. The ideal demodulated curve is that shown in Appendix III, Figure 7.

[28] Field strength measurements are desired. It is anticipated that these may not yield data which are consistent enough to prove compliance with the attenuation standards prescribed above. In that case, measurements with a dummy load of pure resistance, together with data on the antenna characteristics, shall be taken in place of over-all field measurements.

[28a] Television stations shall have until July 1, 1954, for compliance with the requirements of this subparagraph with respect to attenuation of the upper sidebands.

[29] The "synchronizing signal" referred to in this section means either a standard synchronizing wave form or any pulse that will properly set the peak.

[29a] Tolerances for the interval of 0.0 to 0.2 mc are not specified at the present time.

(9) Sufficient monitoring equipment shall be employed to determine whether the visual signal complies with the requirements of this subpart.

(10) For color transmission the transfer characteristic (that is the relationship between the transmitter RF output and video signal input) shall be substantially linear between the reference black and reference white levels.

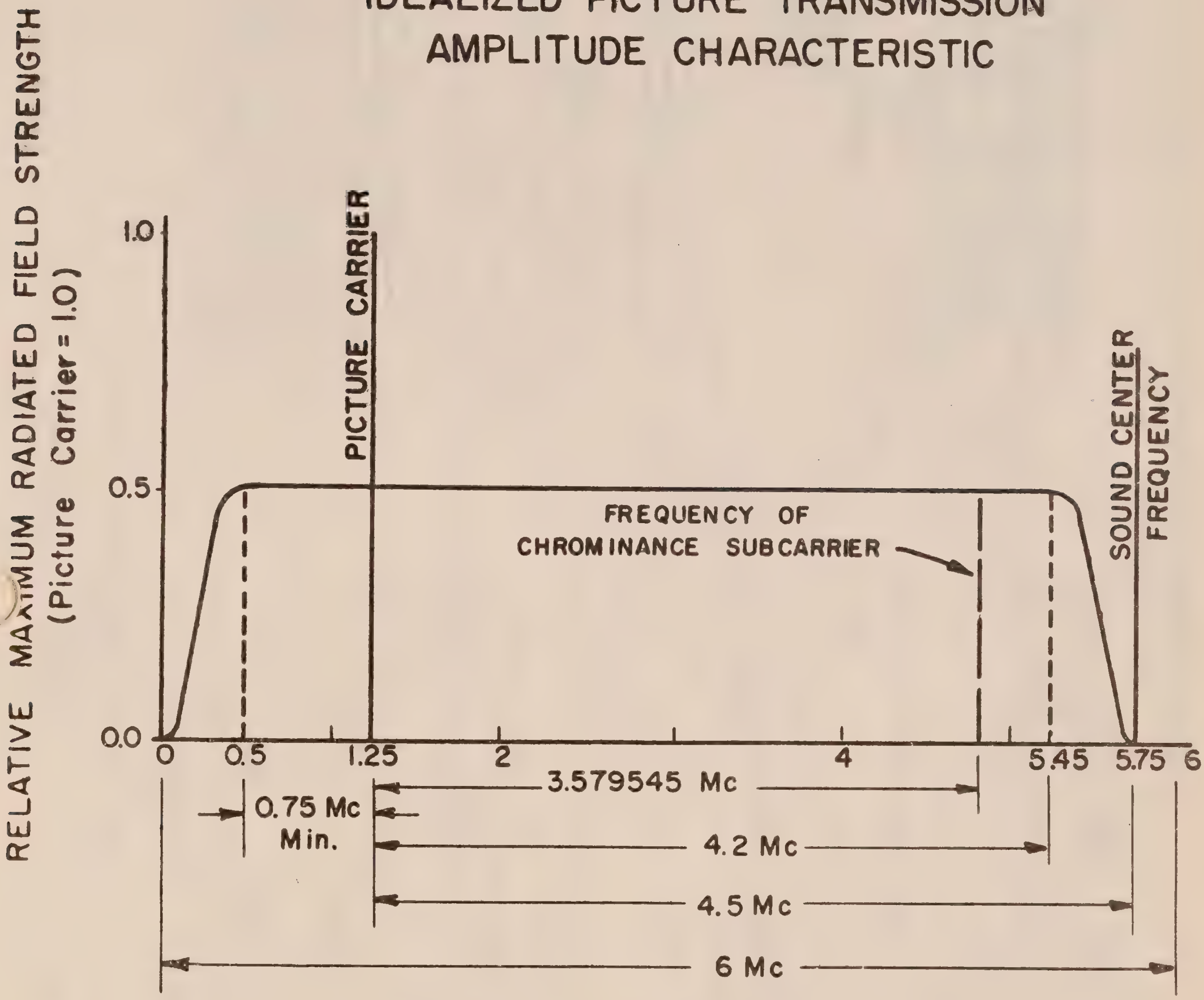
B. Delete paragraph (c) (1) of § 3.687 and substitute the following:

(c) *Requirements applicable to both visual and aural transmitters.* (1) Automatic means shall be provided in the visual transmitter to maintain the carrier frequency within one kilocycle of the authorized frequency; automatic means shall be provided in the aural transmitter to maintain the carrier frequency within four kilocycles of the assigned aural carrier frequency or, alternatively, 4.5 megacycles above the actual visual carrier frequency within 5 kilocycles. For color transmission the aural carrier shall be maintained 4.5 megacycles above the visual carrier within ±1 kilocycle. When required by § 3.606, the visual and aural carrier frequencies are to be offset in frequency by 10 kilocycles (plus or minus, as indicated) from the normal carrier frequencies.

4. Appendix III to Subpart E is amended as follows: Delete Figures 3, 4, and 7 and add the attached Figures 3, 4 (a), 4 (b), 4 (c), and 7.

Effective date of this amendment: Adopted by the Commission December 17, 1953; published in the Federal Register December 23, 1953 (p. 8649); to be effective January 22, 1954

IDEALIZED PICTURE TRANSMISSION AMPLITUDE CHARACTERISTIC



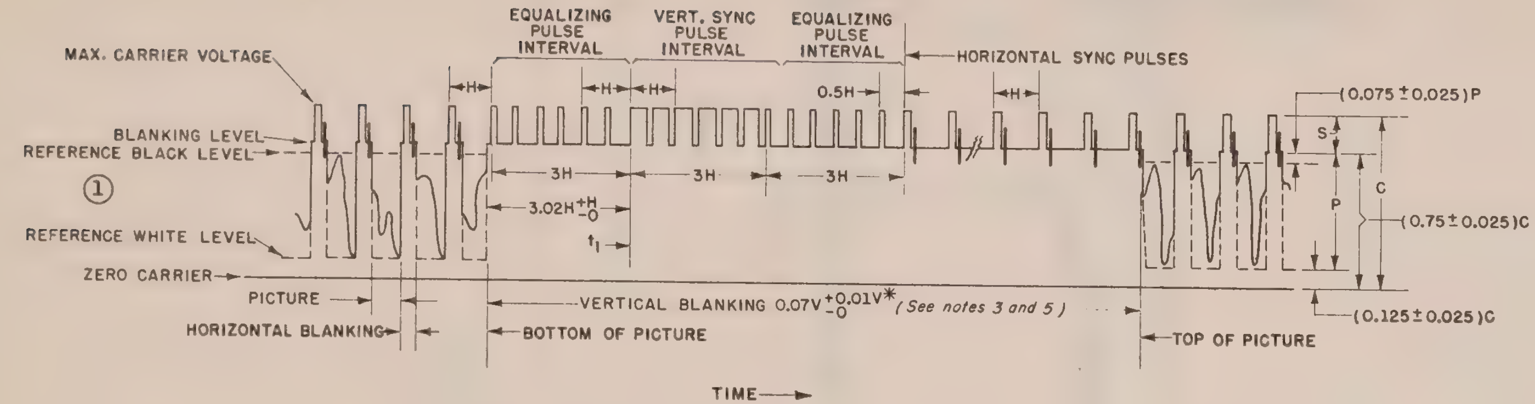
Note: Not drawn to scale

FIGURE 3

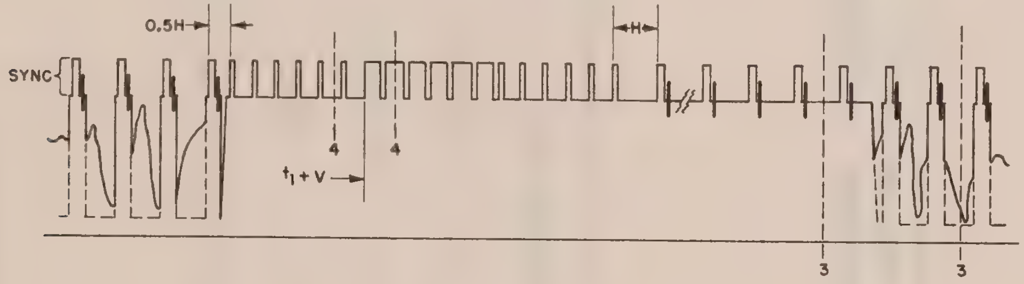
TELEVISION SYNCHRONIZING WAVEFORM

FOR COLOR TRANSMISSION

①

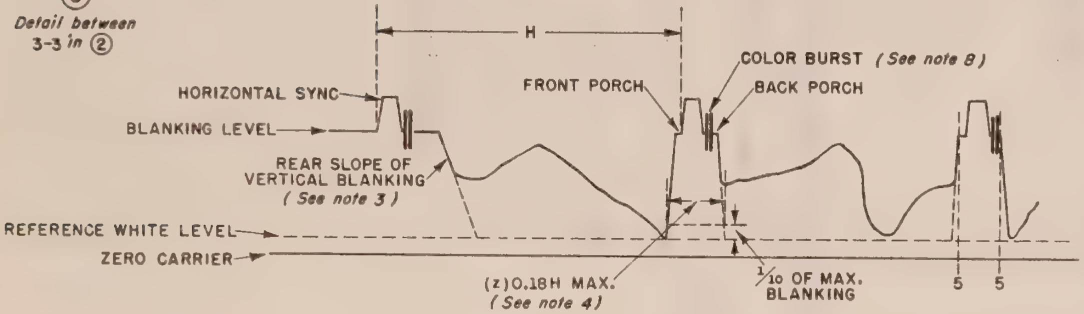

MAX. CARRIER VOLTAGE
BLANKING LEVEL
REFERENCE BLACK LEVEL
REFERENCE WHITE LEVEL
ZERO CARRIER
PICTURE
HORIZONTAL BLANKING
EQUALIZING PULSE INTERVAL
VERT. SYNC PULSE INTERVAL
EQUALIZING PULSE INTERVAL
HORIZONTAL SYNC PULSES
H
H
H
0.5H
H
3H
3H
3H
3.02H +H -0
t_1
VERTICAL BLANKING 0.07V +0.01V -0 * (See notes 3 and 5)
BOTTOM OF PICTURE
TOP OF PICTURE
(0.075 ± 0.025)P
S
P
C
(0.75 ± 0.025)C
(0.125 ± 0.025)C
TIME

②

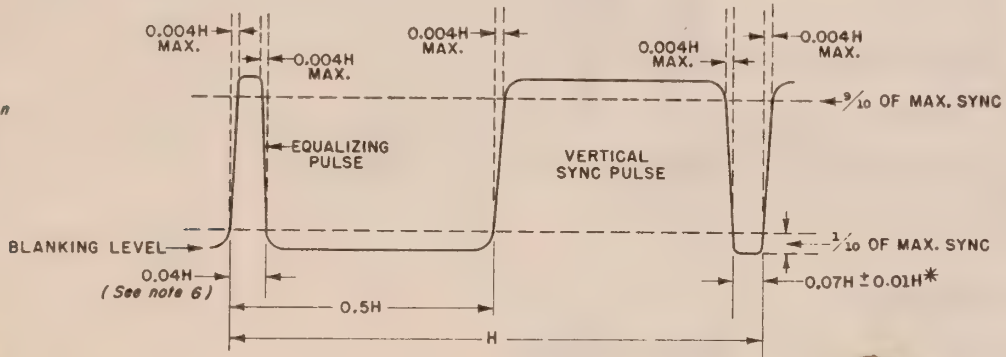

0.5H
H
SYNC
4
4
$t_1 + V$
3
3

Horizontal dimensions not to scale in 1, 2 and 3

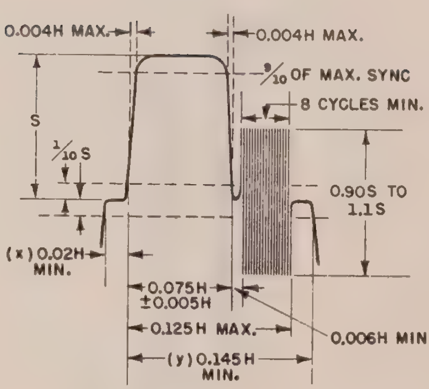
③ *Detail between 3-3 in* ②


H
HORIZONTAL SYNC
BLANKING LEVEL
FRONT PORCH
COLOR BURST (See note 8)
BACK PORCH
REAR SLOPE OF VERTICAL BLANKING (See note 3)
REFERENCE WHITE LEVEL
ZERO CARRIER
(z) 0.18H MAX. (See note 4)
1/10 OF MAX. BLANKING
5
5

④ *Detail between 4-4 in* ②


0.004H MAX.
0.004H MAX.
0.004H MAX.
0.004H MAX.
0.004H MAX.
9/10 OF MAX. SYNC
EQUALIZING PULSE
VERTICAL SYNC PULSE
BLANKING LEVEL
1/10 OF MAX. SYNC
0.04H (See note 6)
0.07H ± 0.01H*
0.5H
H

⑤ *Detail between 5-5 in* ③


0.004H MAX.
0.004H MAX.
9/10 OF MAX. SYNC
8 CYCLES MIN.
S
1/10 S
0.90S TO 1.1S
(x) 0.02H MIN.
0.075H ±0.005H
0.125H MAX.
0.006H MIN.
(y) 0.145H MIN.

NOTES

1 *H = Time from start of one line to start of next line.*

2 *V = Time from start of one field to start of next field.*

3 *Leading and trailing edges of vertical blanking should be complete in less than 0.1H.*

4 *Leading and trailing slopes of horizontal blanking must be steep enough to preserve minimum and maximum values of (x+y) and (z) under all conditions of picture content.*

*5 *Dimensions marked with asterisk indicate that tolerances given are permitted only for long time variations and not for successive cycles.*

6 *Equalizing pulse area shall be between 0.45 and 0.5 of area of a horizontal sync pulse.*

7 *Color burst follows each horizontal pulse, but is omitted following the equalizing pulses and during the broad vertical pulses.*

8 *Color bursts to be omitted during monochrome transmission.*

9 *The burst frequency shall be 3.579545 mc. The tolerance on the frequency shall be ±10 cycles with a maximum rate of change of frequency not to exceed 1/10 cycle per second per second.*

10 *The horizontal scanning frequency shall be $\frac{2}{455}$ times the burst frequency.*

11 *The dimensions specified for the burst determine the times of starting and stopping the burst, but not its phase. The color burst consists of amplitude modulation of a continuous sine wave.*

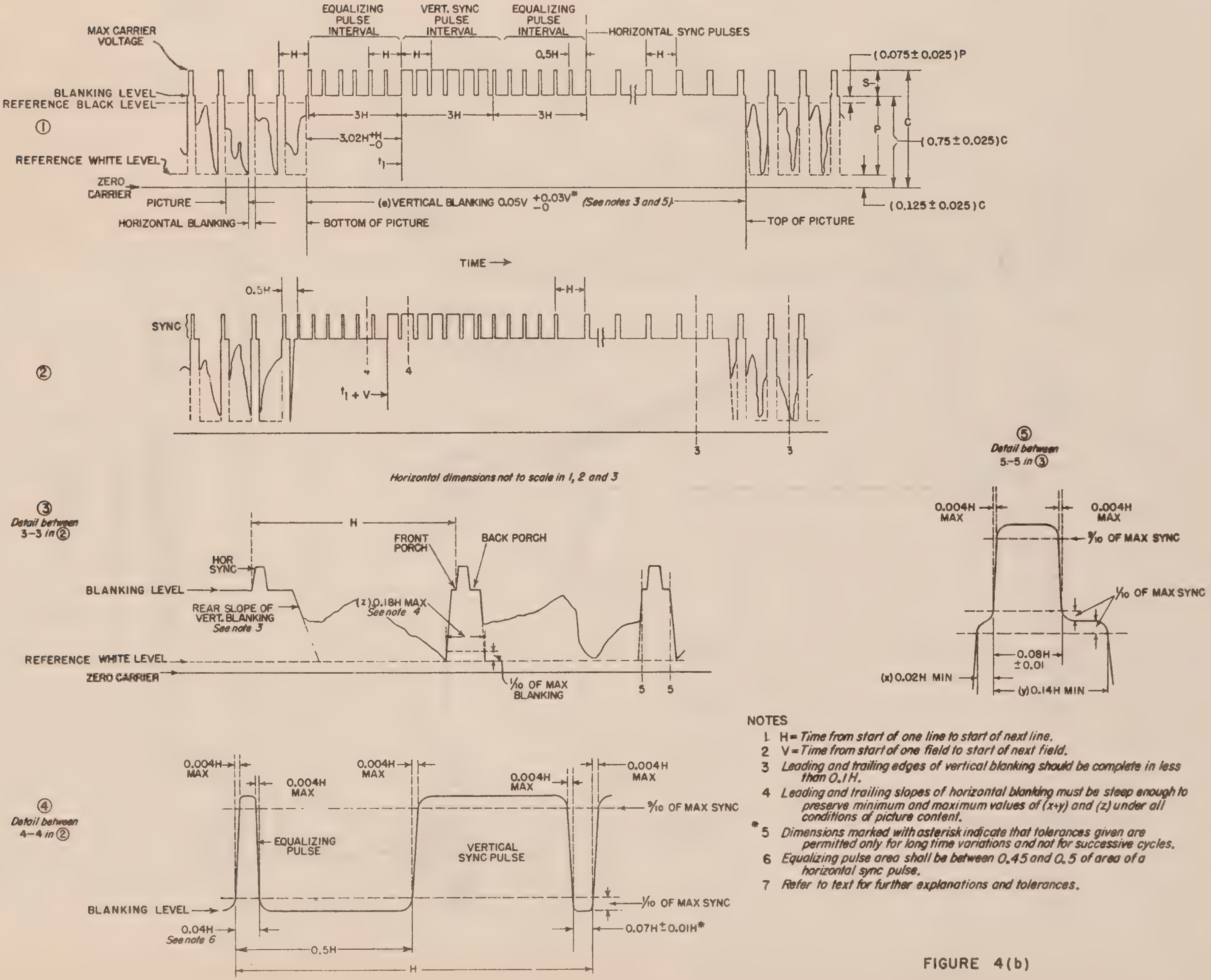
12 *Dimension "P" represents the peak excursion of the luminance signal from blanking level, but does not include the chrominance signal. Dimension "S" is the sync amplitude above blanking level. Dimension "C" is the peak carrier amplitude.*

13 *Refer to text for further explanations and tolerances.*

FIGURE 4(a)

TELEVISION SYNCHRONIZING WAVEFORM

FOR MONOCHROME TRANSMISSION ONLY



EQUALIZING PULSE INTERVAL
VERT. SYNC PULSE INTERVAL
EQUALIZING PULSE INTERVAL
HORIZONTAL SYNC PULSES
MAX CARRIER VOLTAGE
BLANKING LEVEL
REFERENCE BLACK LEVEL
①
REFERENCE WHITE LEVEL
ZERO CARRIER
PICTURE
HORIZONTAL BLANKING
H
H
H
0.5H
H
3H
3H
3H
3.02H +H −0
t_1
(e) VERTICAL BLANKING 0.05V +0.03V* −0 (See notes 3 and 5)
BOTTOM OF PICTURE
TOP OF PICTURE
(0.075 ± 0.025) P
S
P
C
(0.75 ± 0.025) C
(0.125 ± 0.025) C
TIME →
②
0.5H
H
SYNC
t_1 + V
4
4
3
3
Horizontal dimensions not to scale in 1, 2 and 3
③
Detail between 3–3 in ②
H
HOR SYNC
FRONT PORCH
BACK PORCH
BLANKING LEVEL
REAR SLOPE OF VERT. BLANKING See note 3
(z) 0.18H MAX. See note 4
REFERENCE WHITE LEVEL
ZERO CARRIER
1/10 OF MAX BLANKING
5
5
⑤
Detail between 5–5 in ③
0.004H MAX
0.004H MAX
9/10 OF MAX SYNC
1/10 OF MAX SYNC
0.08H ± 0.01
(x) 0.02H MIN
(y) 0.14H MIN
④
Detail between 4–4 in ②
0.004H MAX
0.004H MAX
0.004H MAX
0.004H MAX
0.004H MAX
EQUALIZING PULSE
VERTICAL SYNC PULSE
9/10 OF MAX SYNC
1/10 OF MAX SYNC
BLANKING LEVEL
0.04H See note 6
0.07H ± 0.01H*
0.5H
H

NOTES

1. H = *Time from start of one line to start of next line.*
2. V = *Time from start of one field to start of next field.*
3. *Leading and trailing edges of vertical blanking should be complete in less than 0.1H.*
4. *Leading and trailing slopes of horizontal blanking must be steep enough to preserve minimum and maximum values of (x+y) and (z) under all conditions of picture content.*
5. * *Dimensions marked with asterisk indicate that tolerances given are permitted only for long time variations and not for successive cycles.*
6. *Equalizing pulse area shall be between 0.45 and 0.5 of area of a horizontal sync pulse.*
7. *Refer to text for further explanations and tolerances.*

FIGURE 4(b)

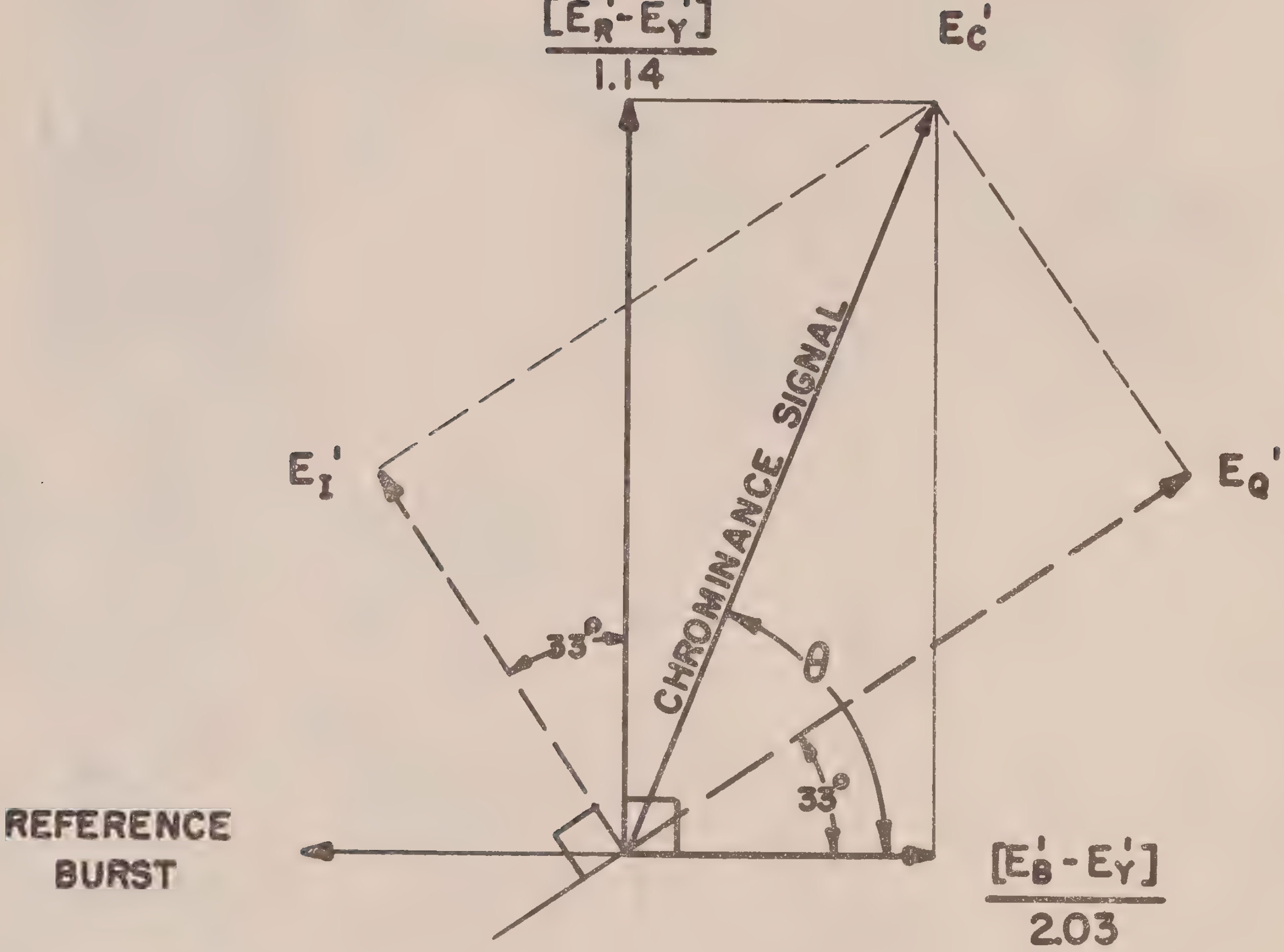
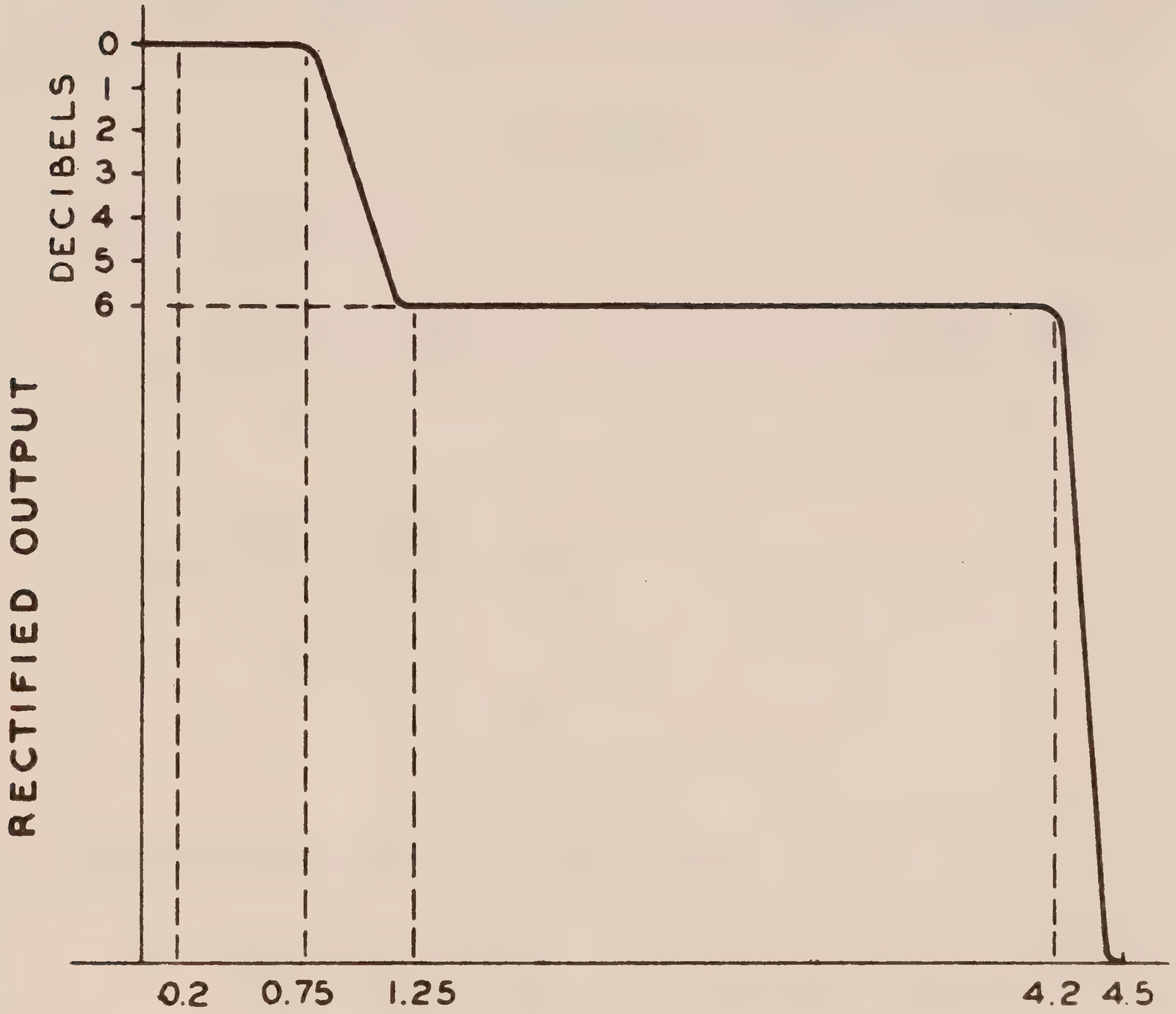

$\frac{[E_R' - E_Y']}{1.14}$
E_C'
E_I'
CHROMINANCE SIGNAL
E_Q'
33°
θ
33°
REFERENCE BURST
$\frac{[E_B' - E_Y']}{2.03}$

FIGURE 4(c)

ASSUMED IDEAL DETECTOR OUTPUT



MODULATING FREQUENCY
MEGACYCLES

FIGURE 7

FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

AMENDMENTS NOS.
3-14 thru 3-18.

PART 3 - RULES GOVERNING RADIO BROADCAST SERVICES.
(Amendments 3-14 thru 3-18 to edition revised to June 30, 1953.)

Incorporated herein for convenience are all amendments to the above-entitled edition of Part 3 adopted between June 17, 1954 and August 24, 1954, together with adoption, publication and effective dates of each amendment.

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AMENDMENT NO. 3-14

The Table of Assignments in Section 3.606 is amended to show the TV channel assignments for Saginaw, Michigan, to be 51-, 57-.

NOTE: The above amendment was adopted by the Commission June 29, 1954 (FCC #7396); published in the Federal Register July 2, 1954 (p. 4034); to be effective immediately.

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AMENDMENT NO. 3-15

1. Section 3.711 is amended to read as follows:

> § 3.711 *Application for international broadcast stations.* If the application is for a construction permit or for modification of an existing authorization, FCC Form 309 shall be filed; if for a license, FCC Form 310 shall be filed; if for a renewal of license, FCC Form 311 shall be filed.

2. Section 3.759 is amended by deleting reference to (FCC Form 312) and substituting therefor the following: "(FCC Form 309)."

NOTE: The above amendment was adopted by the Commission July 21, 1954 (FCC 54-912; Docket No. 9192); published in the Federal Register August 3, 1954 (p. 4743); to be effective September 1, 1954.

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FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

AMENDMENT NO. 15-1

PART 15 - INCIDENTAL AND RESTRICTED RADIATION DEVICES.
(The first amendment to the August 1957 edition)

Directions for altering text:

1. Amend § 15.208 (a) to read as follows:

(a) No low power communication device manufactured after the dates set forth in § 15.211 shall be operated without a station license unless it has been certificated to demonstrate compliance with the requirements in this part.

(Amdt. 15-1; Eff. 1-1-58)

2. Add the following new section:

§ 15.211 *Date when certification is required.* All low power communication devices which operate on frequencies of 70 Mc or above, manufactured after June 30, 1958, shall comply with the certification requirements of this subpart. All low power communication devices which operate on frequencies below 70 Mc, manufactured after December 31, 1957, shall comply with the certification requirements of this subpart.

(Amdt. 15-1; Eff. 1-1-58)

NOTE: This amendment was adopted by the Commission December 18, 1957, effective January 1, 1958 (FCC 57-1394); published in the Federal Register December 24, 1957 (22 FR 10493).

F.C.C. - Washington, D.C.

FCC Form 38
February 1955

RECORD OF AMENDMENTS

AMDT. NO.	ADOPTED	EFFECTIVE	FCC NO.	DOCKET	FEDERAL REGISTER		SECTIONS ADDED, AMENDED AND/OR DELETED
					DATE	CITATION	

F.C.C. - WASHINGTON, D. C.

FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

AMENDMENT NO. 15-2

PART 15 - INCIDENTAL AND RESTRICTED RADIATION DEVICES.
(The second amendment to the August 1957 edition)

Directions for altering text:

1. Amend § 15.63 (b) (2) by changing the text thereof to read as follows:

(2) Institute of Radio Engineers Standard 54 IRE 17.S1 and amendment 56 IRE 27.S1 for power line interference measurements for television broadcast receivers.

(Amdt. 15-2; Eff. 4-28-58)

2. Amend footnote 1 to table contained in § 15.161 by changing the text thereof to read as follows:

[1] For the purpose of this section, a sparsely inhabited area is that area within 1,000 feet of a community antenna television system where television broadcast signals are, in fact, not being received directly from a television broadcast station.

(Amdt. 15-2; Eff. 4-28-58)

NOTE: This amendment was adopted by the Commission April 17, 1958, effective April 28, 1958; published in the Federal Register April 25, 1958 (23 FR 2770).

F.C.C. - Washington, D. C.

FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

AMENDMENT NO. 15-1

PART 15 - INCIDENTAL AND RESTRICTED RADIATION DEVICES.
(The first amendment to the August 1957 edition)

Directions for altering text:

1. Amend § 15.208 (a) to read as follows:

(a) No low power communication device manufactured after the dates set forth in § 15.211 shall be operated without a station license unless it has been certificated to demonstrate compliance with the requirements in this part.

(Amdt. 15-1; Eff. 1-1-58)

2. Add the following new section:

§ 15.211 *Date when certification is required.* All low power communication devices which operate on frequencies of 70 Mc or above, manufactured after June 30, 1958, shall comply with the certification requirements of this subpart. All low power communication devices which operate on frequencies below 70 Mc, manufactured after December 31, 1957, shall comply with the certification requirements of this subpart.

(Amdt. 15-1; Eff. 1-1-58)

NOTE: This amendment was adopted by the Commission December 18, 1957, effective January 1, 1958 (FCC 57-1394); published in the Federal Register December 24, 1957 (22 FR 10493).

F.C.C. - Washington, D.C.

FCC Form 38
February 1955

RECORD OF AMENDMENTS

AMDT. NO.	ADOPTED	EFFECTIVE	FCC NO.	DOCKET	FEDERAL REGISTER		SECTIONS ADDED, AMENDED AND/OR DELETED
					DATE	CITATION	

F.C.C. - WASHINGTON, D. C.

FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

AMENDMENT NO. 3-4

PART 3 - RULES GOVERNING RADIO BROADCAST SERVICES.
(The fourth amendment to edition revised to June 30, 1953.)

Directions for altering text:

1. Section 3.681 is amended to read as follows:

§ 3.681 *Definitions.*

Amplitude modulation (AM). A system of modulation in which the envelope of the transmitted wave contains a component similar to the wave form of the signal to be transmitted.

Antenna height above average terrain. The average of the antenna heights above the terrain from two to ten miles from the antenna for the eight directions spaced evenly for each 45 degrees of azimuth starting with True North. (In general, a different antenna height will be determined in each direction from the antenna. The average of these various heights is considered the antenna height above the average terrain. In some cases less than 8 directions may be used. See § 3.684 (d)).

Antenna power gain. The square of the ratio of the root-mean-square free space field intensity produced at one mile in the horizontal plane, in millivolts per meter for one kilowatt antenna input power to 137.6 mv/m. This ratio should be expressed in decibels (db). (If specified for a particular direction, antenna power gain is based on the field strength in that direction only.)

Aspect ratio. The ratio of picture width to picture height as transmitted.

Aural transmitter. The radio equipment for the transmission of the aural signal only.

Aural center frequency. (1) The average frequency of the emitted wave when modulated by a sinusoidal signal; (2) the frequency of the emitted wave without modulation.

Blanking level. The level of the signal during the blanking interval, except the interval during the scanning synchronizing pulse and the chrominance subcarrier synchronizing burst.

Chrominance. The colorimetric difference between any color and a reference color of equal luminance, the reference color having a specific chromaticity.

Chrominance subcarrier. The carrier which is modulated by the chrominance information.

Color transmission. The transmission of color television signals which can be reproduced with different values of hue, saturation, and luminance.

Effective radiated power. The product of the antenna input power and the antenna power gain. This product should be expressed in kilowatts and in decibels above one kilowatt (dbk). (If specified for a particular direction, effective radiated power is based on the antenna power gain in that direction only. The licensed effective radiated power is based on the average antenna power gain for each horizontal plane direction.)

Field. Scanning through the picture area once in the chosen scanning pattern. In the line interlaced scanning pattern of two to one, the scanning of the alternate lines of the picture area once.

Frame. Scanning all of the picture area once. In the line interlaced scanning pattern of two to one, a frame consists of two fiields.

Free space field intensity. The field intensity that would exist at a point in the absence of waves reflected from the earth or other reflecting objects.

Frequency modulation (FM). A system of modulation where the instantaneous radio frequency varies in proportion to the instantaneous amplitude of the modulating signal (amplitude of modulating signal to be measured after pre-emphasis, if used) and the instantaneous radio frequency is independent of the frequency of the modulating signal.

Frequency swing. The instantaneous departure of the frequency of the emitted wave from the center frequency resulting from modulation.

Interlaced scanning. A scanning process in which successively scanned lines are spaced an integral number of line widths, and in which the adjacent lines are scanned during successive cycles of the field frequency.

Luminance. Luminous flux emitted, reflected, or transmitted per unit solid angle per unit projected area of the source.

Monochrome transmission. The transmission of television signals which can be reproduced in gradations of a single color only.

Negative transmission. Where a decrease in initial light intensity causes an increase in the transmitted power.

Peak power. The power over a radio frequency cycle corresponding in amplitude to synchronizing peaks.

Percentage modulation. As applied to frequency modulation, the ratio of the actual frequency swing to the frequency swing defined as 100 percent modulation, expressed in percentage. For the aural transmitter of television broadcast stations, a frequency swing of ±25 kilocycles is defined as 100 percent modulation.

Polarization. The direction of the electric field as radiated from the transmitting antenna.

Reference black level. The level corresponding to the specified maximum excursion of the luminance signal in the black direction.

Reference white level of the luminance signal. The level corresponding to the

specified maximum excursion of the luminance signal in the white direction.

Scanning. The process of analyzing successively, according to a predetermined method, the light values of picture elements constituting the total picture area.

Scanning line. A single continuous narrow strip of the picture area containing highlights, shadows, and half-tones, determined by the process of scanning.

Standard television signal. A signal which conforms to the television transmission standards.

Synchronization. The maintenance of one operation in step with another.

Television broadcast band. The frequencies in the band extending from 54 to 890 megacycles which are assignable to television broadcast stations. These frequencies are 54 to 72 megacycles (channels 2 through 4), 76 to 88 megacycles (channels 5 and 6), 174 to 216 megacycles (channels 7 through 13), and 470 to 890 megacycles (channels 14 through 83).

Television broadcast station. A station in the television broadcast band transmitting simultaneous visual and aural signals intended to be received by the general public.

Television channel. A band of frequencies 6 megacycles wide in the television broadcast band and designated either by number or by the extreme lower and upper frequencies.

Television transmission standards. The standards which determine the characteristics of a television signal as radiated by a television broadcast station.

Television transmitter. The radio transmitter or transmitters for the transmission of both visual and aural signals.

Vestigial sideband transmission. A system of transmission wherein one of the generated sidebands is partially attenuated at the transmitter and radiated only in part.

Visual carrier frequency. The frequency of the carrier which is modulated by the picture information.

Visual transmitter. The radio equipment for the transmission of the visual signal only.

Visual transmitter power. The peak power output when transmitting a standard television signal.

2. Section 3.682 is amended as follows:

Delete paragraph (a) and substitute the following:

§ 3.682 *Transmission standards and changes*—(a) *Transmission standards.* (1) The width of the television broadcast channel shall be six megacycles per second.

(2) The visual carrier frequency shall be nominally 1.25 mc above the lower boundary of the channel.

(3) The aural center frequency shall be 4.5 mc higher than the visual carrier frequency.

(4) The visual transmission amplitude characteristic shall be in accordance with the chart designated as Appendix III, Figure 3.

(5) The chrominance subcarrier frequency shall be 3.579545 mc ± 10 cycles per second with a maximum rate of change not to exceed one tenth cycle per second per second.

(6) For monochrome and color transmissions the number of scanning lines per frame shall be 525, interlaced two to one in successive fields. The horizontal scanning frequency shall be $\frac{2}{455}$ times the chrominance subcarrier frequency; this corresponds nominally to 15,750 cycles per second (with an actual value of 15,734.264 ± 0.044 cycles per second). The vertical scanning frequency is $\frac{2}{525}$ times the horizontal scanning frequency; this corresponds nominally to 60 cycles per second (the actual value is 59.94 cycles per second). For monochrome transmissions only, the nominal values of line and field frequencies may be used.

(7) The aspect ratio of the transmitted television picture shall be 4 units horizontally to 3 units vertically.

(8) During active scanning intervals, the scene shall be scanned from left to right horizontally and from top to bottom vertically, at uniform velocities.

(9) A carrier shall be modulated within a single television channel for both picture and synchronizing signals. For monochrome transmission, the two signals comprise different modulation ranges in amplitude, in accordance with the charts designated as Appendix III, Figures 3 and 4 (b). For color transmission, the two signals comprise different modulation ranges in amplitude except where the chrominance penetrates the synchronizing region and the burst penetrates the picture region, in accordance with the the charts designated as Appendix III, Figures 3 and 4 (a).

(10) A decrease in initial light intensity shall cause an increase in radiated power (negative transmission).

(11) The reference black level shall be represented by a definite carrier level, independent of light and shade in the picture.

(12) The blanking level shall be transmitted at 75±2.5 percent of the peak carrier level.

(13) The reference white level of the luminance signal shall be 12.5±2.5 percent of the peak carrier level.

(14) The signals radiated shall have horizontal polarization.

(15) An effective radiated power of the aural transmitter not less than 50 percent nor more than 70 percent of the peak radiated power of the visual transmitter shall be employed.

(16) The peak-to-peak variation of transmitter output within one frame of video signal due to all causes, including hum, noise, and low-frequency response, measured at both scanning synchronizing peak and blanking level, shall not exceed 5 percent of the average scanning synchronizing peak signal amplitude.[20]

(17) The reference black level shall be separated from the blanking level by the setup interval, which shall be 7.5±2.5 percent of the video range from blanking level to the reference white level.

(18) For monochrome transmission, the transmitter output shall vary in substantially inverse logarithmic relation to the brightness of the subject. No tolerances are set at this time.[20]

(19) The color picture signal shall correspond to a luminance component transmitted as amplitude modulation of the picture carrier and a simultaneous pair of chrominance components transmitted as the amplitude modulation sidebands of a pair of suppressed subcarriers in quadrature.

(20) Equation of complete color signal.

(i) The color picture signal has the following composition:

$$E_M = E_Y' + \{E_Q' \sin(\omega t + 33^\circ) + E_I' \cos(\omega t + 33^\circ)\}$$

Where:

$$E_Q' = 0.41(E_B' - E_Y') + 0.48(E_R' - E_Y').$$
$$E_I' = -0.27(E_B' - E_Y') + 0.74(E_R' - E_Y').$$
$$E_Y' = 0.30E_R' + 0.59E_G' + 0.11E_B'.$$

For color-difference frequencies below 500 kc (see (iii) below), the signal can be represented by:

$$E_M = E_Y' + \left\{ \frac{1}{1.14} \left[\frac{1}{1.78}(E_B' - E_Y') \sin \omega t + (E_R' - E_Y') \cos \omega t \right] \right\}$$

(ii) The symbols in (i) have the following significance:

E_M is the total video voltage, corresponding to the scanning of a particular picture element, applied to the modulator of the picture transmitter.

E_Y' is the gamma-corrected voltage of the monochrome (black-and-white) portion of the color picture signal, corresponding to the given picture element.[21]

E_Q' and E_I' are the amplitudes of two orthogonal components of the chrominance signal corresponding respectively to narrow-band and wide-band axes.

E_R', E_G', and E_B' are the gamma-corrected voltages corresponding to red, green, and blue signals during the scanning of the given picture element.

ω is the angular frequency and is 2π times the frequency of the chrominance subcarrier.

The portion of each expression between brackets in (i) represents the chrominance subcarrier signal which carries the chrominance information.

The phase reference in the E_M equation in (i) is the phase of the burst + 180°, as shown in Figure 4 (c). The burst corresponds to amplitude modulation of a continuous sine wave.

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[20] These items are subject to change but are considered the best practice under the present state of the art. They will not be enforced pending a further determination thereof.

[21] Forming of the high frequency portion of the monochrome signal in a different manner is permissible and may in fact be desirable in order to improve the sharpness on saturated colors.

cont opp p62